

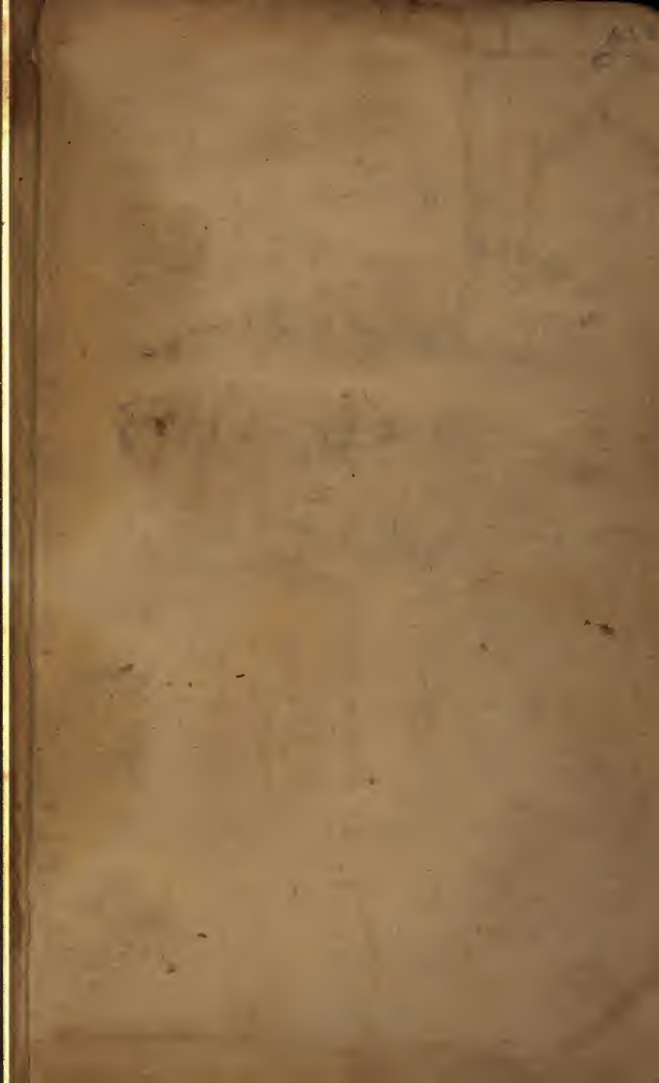
THE PAINTER'S HAND BOOK

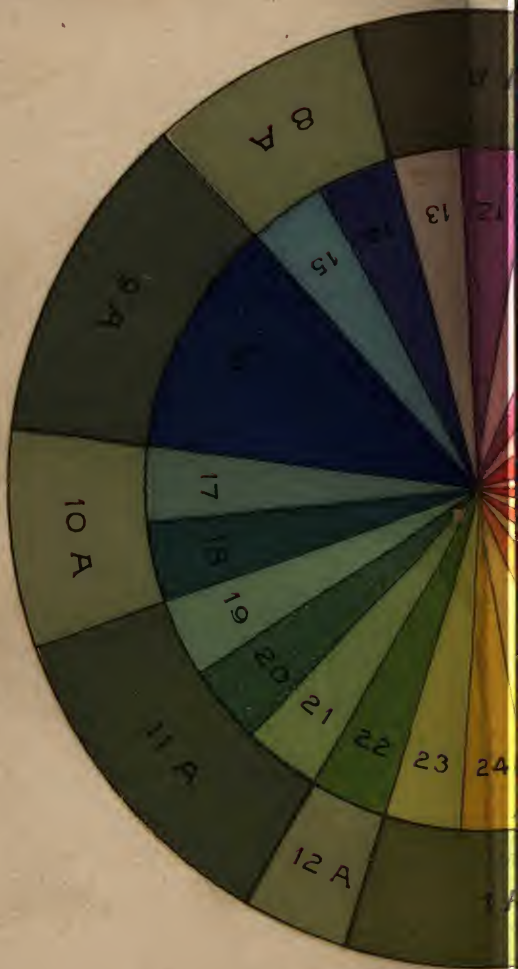


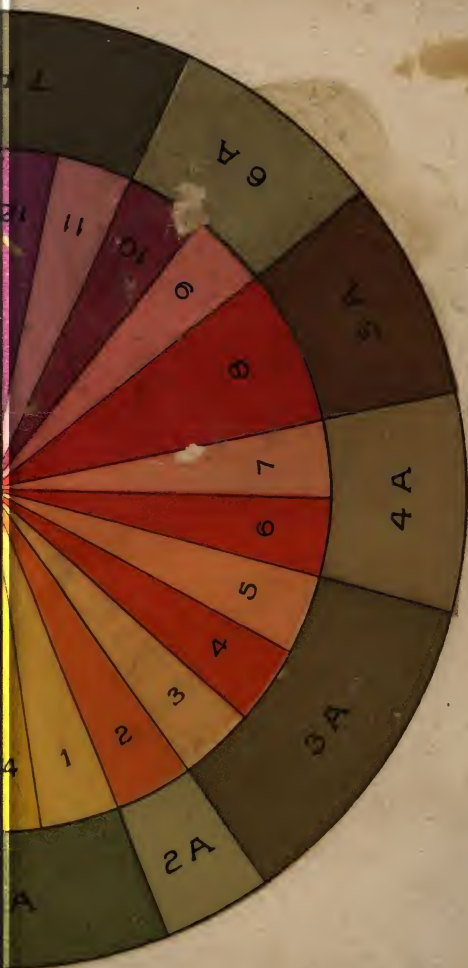
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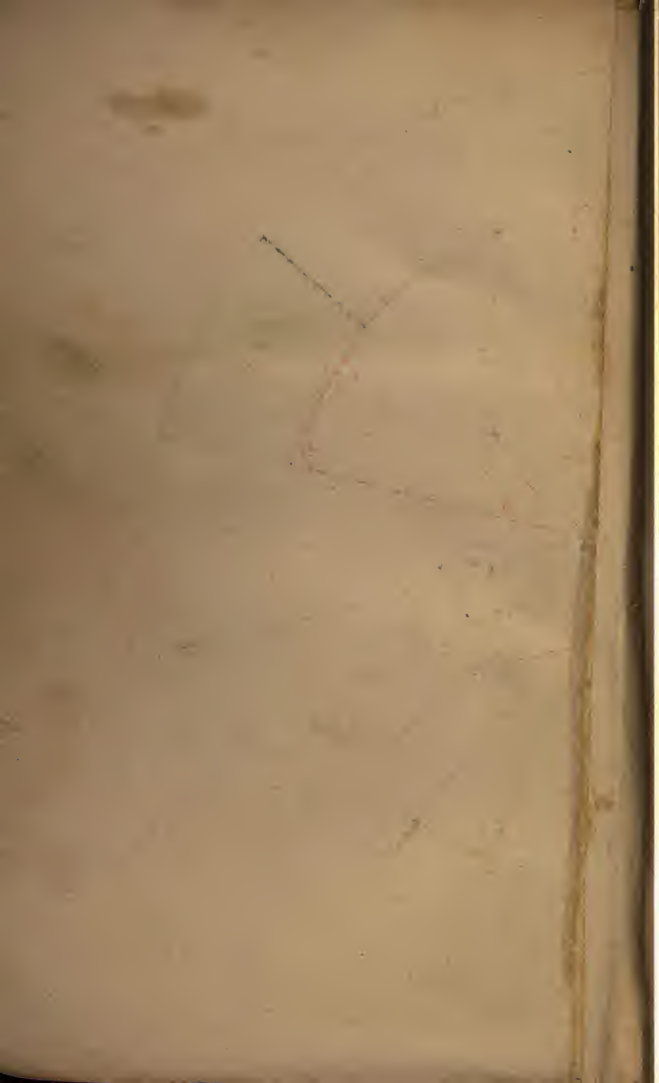
Compliments of
The Eastern White Lead Co
to A. M. HARRIS

1887









THE
PAINTER'S HAND-BOOK:

CONTAINING INFORMATION AS TO

COLOR HARMONY, THE PROPERTIES OF COLORS, PRACTICAL
RULES FOR THE MENSURATION AND PREPARATION OF
WORK, MANNER OF MIXING AND APPLYING PAINT TO
GET VARIOUS KINDS OF FINISH, AND OF OILING,
VARNISHING AND POLISHING OF HARD WOOD,
TOGETHER WITH FORMULÆ FOR MIXING
116 VARIATIONS OF COLOR OR SHADES.

BY

B. S. MILLS,

Sec'y of The Master House Painters' Association.

PUBLISHED BY
THE ECKSTEIN WHITE LEAD CO.
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CINCINNATI.

INTRODUCTORY.

THE writer's object, in writing this Hand-book, is to place into the hands of painters, in a handy form, and for future reference, some data, figures and facts too burdensome to charge the memory with; and, also, to make an effort to place those members of the craft who, from any cause, are not in the front ranks of advanced knowledge in art, in such a position, that with some little labor on their part, they may go on from strength to strength, and may be able to comprehend the heights and depths that there are in the science of chromatics, or the art of producing pleasant and agreeable effects, or harmony, in the combinations of color. As those who have studied this matter know well, there are profound depths to this intensely interesting science. To sound these fully is impossible in a limited space. The writer will endeavor, for this reason, to compass his object by discarding, as much as possible, all merely theoretic and unverified problems, and state in as few words as he can, the simple condensed truths or facts. These truths and facts have been selected, or collated, from much that has been authoritatively written on the subject of color harmony, which statement will, he hopes, excuse the dogmatic style he has adopted, and be accepted as the reason why he has not quoted all his authorities in full or given extended arguments in support of his assertions.

He will also ask the pardon of his fellow craftsmen who have had a long and varied experience, for recommending much that they may know as well or better than himself. They may know however, that there are in our ranks many young and worthy men who are ambitious to excel, and of such who shall say how much may, or may not be, profitable to them. He therefore hopes that the work may be an aid, however slight, in placing such co-workers in the craft, (which has been his own life-work,) fully abreast of the present time.

 Colors may vary in quality, but the *Phœnix* brand of Pure White Lead does not. It is always the best.

REGARDING COLOR HARMONY.

The art of determining by the eye alone, which are the colors giving pleasing effects when placed in combination and contrast, or those which do not, is a gift which comparatively few persons possess. *Painters* who have this gift or talent are usually successful in their craft; for by means of it they are not only able to please their customers by, or through the artistic beauty of their work, but are successful for the additional reason that they do not have to resort to "Paint and try methods," in mixing and contrasting colors or shades, saving to themselves, thereby, in both time and material, and enabling them to do work under just so much of an advantage.


Knowledge is power in this case, and a money-saving one at that.

In order to aid those who do not possess this gift naturally, it may be proper to say that scientific observers have formulated a system by means of which pleasing combinations and the best results can surely be had, without doubt, and the unpleasant, as well as unprofitably bad arrangement of colors be avoided.

In order that an intelligent and practical idea of this all-important subject may be arrived at, the following section on "color harmony" has been added to this Hand-Book, with the hope that it will satisfy a long-felt want in as practical a way as limited space will allow, without entering into a discussion very largely upon the merits or demerits of conflicting theories.

The system, facts and practical results hereafter to be stated are based upon the theories and experiments of M. Michael Eugene Chevreul, Sir Christopher Dresser and Prof. Church, and any differences from their views are all on the side of practicability.

These names are ample authority for any statement they may make concerning the art of coloring. M. Chevreul is the oldest Professor in the world (so stated), having lately passed his one hundredth birthday. A very large part of his long life has been passed as Director of the Color Department of the French Gobelin Tapestry Factory, but of whom it is stated that, "His eye is not yet dim nor his natural mental faculties abated." Of Sir Christopher Dres-

 *Colors do not lose their brilliancy when mixed with the Phoenix brand of Pure White Lead.*

ser, Ph. D., F. L. S., etc., it may be said that none excel him as a designer and decorator. The recent impulse in the improvement of old, and the invention of new styles of color and ornament in wall papers is due largely to him.

Prof. Church is an Englishman well and favorably known. With this galaxy of authority we may well be pardoned for reiterating their opinions.

THE PRINCIPLE OF COLOR HARMONY.

The Rainbow or Solar Spectrum is probably the prettiest arrangement of color in nature, it is the foundation on which has been built the theory of color harmony. The rainbow is simply light analyzed into its elements, that is, its colors. Newton taught that these elements or colors were seven, viz: *violet, indigo, blue, green, yellow, orange and red*. Later observers have, however, narrowed these elements down to three, *red, blue, and yellow*. These three then are the *only essential colors*, because, having these, all other colors can be made from them.


Primary colors are the pure elemental colors, *blue, red, yellow*.

Secondary colors result from combining equal parts of any two primaries, as *orange, green*.

Tertiary colors result from combining two secondaries, as *russet or citrine*.

It may be proper to state, however, that other opinions are held, thus, Helmholtz, a celebrated German scientist, contends that the primary colors are five (5), namely, red, yellow, green, blue, and violet. While Prof. Clark Maxwell differs from him to this extent, that the only essential colors are scarlet, green, and blue. Prof. Young varies this by claiming that red, green, and violet are the primaries. Concerning these Prof. Church voices the opinion of practical men by saying substantially of Maxwell, that however much his experiments may prove his position when colored light is the subject of experiment, yet in practice the common theory (as in the text above) is better.

In the rainbow we see the three primary colors all at once, or *simultaneously*, partly pure, partly in contrast and combination, hence the law: That a *full harmony of contrast* requires the *presence* of *yellow, red, and blue* in prismatic proportions, namely, of yellow 3, of red 5, and of blue 8 parts respectively, i. e., parts of surface or depth of color, and *not of*

 As colors of different manufacturers vary in excellence, so it is with Pure White Lead.

weight of material. It is in conformity with this law that *blue* looks pretty in contrast with *orange*, a fact which the gentler sex very well know, and their judgment is worth much in this matter. *Orange* is a secondary color, being composed of red and yellow. Both of these colors the eye detects in its composition and instinctively calls up blue to combine or contrast with them. This color, when furnished, completes the harmony, because the three primary colors are present and visible to the eye, although two of them (red and yellow) are in combination (in the orange) and only one (blue) is pure. It is *blue*, therefore, which is *complementary* to *orange*.

In like manner *red* and *green* form an agreeable contrast, and for the same reason, viz: two of the primaries are in the green (blue and yellow), the only primary lacking of the three is *red*, therefore *red* is the *complementary* color to *green*.


Violet and *yellow* are complementary for the same reason because the eye detects the presence of red and blue in violet and requires yellow to contrast or combine with them.

In confirmation of the above statements it is a singular fact that the eye will, to a great extent, create any color of which there is a deficiency. This can be proven as follows: Place a bright red spot or circle, about the size of a quarter, on a piece of white or light grey paper, and look intently upon it for some time. A *green halo* will appear around it, or after gazing for some time at the (red) disc, jerk it away by suitable means and a green spot will for an instant or so seem to take its place. This then proves that the eye instinctively requires green to contrast with red and demonstrates that the one is the complement of the other. The like will be the result with any bright colors, such as blue and orange or violet and yellow.

It is for the above reasons that non-complementary colors, when placed side and side, either absorb qualities which do not belong to them or lose those which they do possess. Thus a *blue* spoils a *black* by making it look *rusty*, a *red* spoils a *blue* by making it look *greenish*. Nature and the concurrent testimony of an educated taste therefore combine to certify that the brightest, purest and best effects in coloring are attainable when complementary contrasts are used.

A complementary color may now be defined to mean *Any color which, when placed in combination or contrast with another color, fills or completes the natural harmony with that color.*

The *Natural Harmony* being understood to be the harmony resulting from a *simultaneous view* of the *three essential*

 Colors are frequently adulterated with barytes. An ounce of gold will be paid for every ounce of adulteration found in the Phoenix brand of Pure White Lead.

or primary colors of the solar spectrum, blue, red and yellow. This *simultaneous view* comprehends the viewing of either the colors in their pure state when in juxtaposition, as blue, red and yellow, or when any two of them are mixed, and the resultant color (a secondary) is placed in combination with the remaining third primary, as orange and blue, green and red, or violet and yellow.

Every color, hue, tint, or shade has its own complement, and the law which is applicable to one is applicable to all.

Hues are modifications of color by other colors.

Tints are produced by adding white to colors or hues.

Shades are produced in like manner by adding black.

Tones signify colors or hues mixed with varying proportions of either white or black. *White* weakens or reduces the tone. *Black* dulls them.

Complementary colors not only furnish the greatest contrasts, but they mutually help and strengthen each other.


Non-complementary colors, when in juxtaposition, either mutually help each other, or, one is *improved* while the other is *injured*; or, they mutually injure each other. An example of the first class is found in *yellow* and *blue*. Of the second case in *blue* and *bluish-violet*, and of the third case in *blue* and *violet*.

White and *black* are considered *complementary*.

Another way of expressing the above statement: (that blue and yellow are mutually helpful) may be, that they are to an extent harmonious, and similar to the partial harmony in music which exists when the treble is accompanied by the base only—the harmony is simply *incomplete*.

In order to find quickly the complement to any selected color, a diagram of color harmony has been devised, to which reference is now made (Frontispiece).

This diagram is constructed conformably to the law as stated and explained above, and is believed to be substantially correct. It may be well to state, however, that colors will change slightly when shut out from light, and otherwise. It will be well therefore to note these conditions, descriptive. The three *primary colors* should be the best, purest and most brilliant obtainable, for the best of them portray, "only by courtesy," the colors of the spectrum. The

 Colors mixed with the *Phoenix* brand of Pure White Lead are not muddy.


secondary colors lying *midway* between these primaries, in each case should be just *midway in color*, partaking of *both primaries equally*, but inclining to neither, and so it should also be with the *hues* between the *primaries* and *secondaries*; alternating between the *colors* and *hues* are *tints* formed in like manner equally of each abutting *color* and *hue*. On such a diagram these modulations are of course limited in number, as it would be next to impossible to exhibit all the variations which might be formed from three primaries. Although impossible in fact, this must, however, be the supposition, viz: that every color and variation of color, hue and tint is represented, each formed equally of and gliding imperceptibly into the other.

The diagram is in the form of *two circles*, an *inner* and an *outer* one. The *inner one* embracing the three primaries, three secondaries, six hues and twelve tints—twenty-four unequal divisions in all—and all progressing by half tones from one to the other, and numbered from No. 1 up to No. 24 consecutively. The outer circle is divided into twelve divisions, also unequal, and embracing the tertiaries or third mixtures, and are numbered from 1 A to 12 A inclusive.

It were possibly better if this circle had also had the same number of divisions, together with modulations of color, as had the inner one, for there are as many variations in the tertiaries as there are in the simpler colors. This arrangement was found, however, to be impractical. Imagine, then, that there is a tertiary for each color, hue and tint contained within the inner circle.

The tertiaries are all formed by combining *two of the secondaries*. Thus *citrine* is the *yellow tertiary*; it is formed of *orange* and *green*, having, therefore, two equivalents of *yellow* (one in orange and one in green), and one each of *blue* and *red* (the former in the green, the latter in the orange), the yellow predominating makes it the yellow tertiary. *Russet* is the *red tertiary*, and is formed of *orange* and *purple*; in the composition of both of which colors is *red*, and so, following the same reasoning as with citrine and yellow, it (red) predominates, leaving one equivalent only of yellow and blue to complete the combination. Slate for the same reason is the blue tertiary.

The tertiaries are all greys. Citrine is a yellow-grey, russet, a red; and slate a blue-grey. If all were mixed together a neutral or pure grey would result.

 *Colors have in themselves very little body; the Phoenix brand of Pure White Lead gives this quality to them.*

The same law which governs the primaries and secondaries applies also to the tertiaries. Therefore three of them are required for a full harmony, and, if the outer circle had the same number of divisions as the inner, the tertiaries would appear over their nominating primaries, and would be linked with them. Thus, citrine, the yellow-grey, makes a good harmony with red and blue.

HOW TO USE THE DIAGRAM.


(See Frontispiece.)

Remember the law of *color harmony* requires in a combination the *presence* of the *three primaries*, either pure or mixed, i. e., in the form of secondaries or tertiaries. Such being the case, it follows that, as the diagram is divided into 24 parts, each *eighth division from the starting-point or one-third the whole will be one of those three colors* required. As an example, suppose there is a color for which two harmonious contrasts are desired, the color in this case being No. 4. Eight divisions from No. 4 gives No. 12, and eight divisions from the latter gives No. 20. These colors then, namely 12 and 20, are the proper ones to contrast with No. 4. The same rule holds good if combinations of 4, 6, 8 or 12 colors are desired; in the case of 4, *every 6th* color must be taken; with 6, *every 4th*; with 8 *every 3d*, while with 12 *every other division* makes the harmony.

The *complementary color*, for any one chosen will be found exactly opposite to it or half way around the circle, 12 divisions.

Strictly speaking, the hard and fast rules laid down above have to be tempered with judgment to a certain extent. It is practically impossible to blend the colors in a circle of harmony so that one will melt into the other imperceptibly. For this reason the *place* in the circle must determine, to a great extent, the correctness of any color, etc., and not the exact color, etc., given on the diagram.

An example of what is meant by this is that No. 2 on the diagram is *not the exact proper color for that location*; its *true theoretical tint* should be between the pure yellow and the yellow-orange of No. 3, of which here No. 2 is supposed to be merely a tint.

 *The Phœnix brand of Pure White Lead has a reputation of fifty years standing. Its superiority has never been questioned.*


HINTS ON COLORING.

Outside Work.

In painting the outside of a house, as a rule, crude, loud, or glaring effects are not in good taste; hence, pure colors toned down considerably with white or some black will give more satisfactory results; the majority prefer but few colors. The color, however, largely depends upon the style of the house. A Swiss or Queen Anne style will bear much stronger treatment than a plain, square, old style of house. In any case the proper treatment depends greatly on the surroundings. If the roof of a house is painted and is prominently seen, a strong contrast is generally allowable, especially if its background be thick green foliage; in such a case red or brown is good. On the body of the house itself a creamy tint may be put; while some shades of citrine can be used for the trimmings and blinds, picking out any ornamental processes in small masses (and perhaps the porch ceilings also) in blue or bluish tones. It will be seen that in this scheme we have *representatives* of the three primary colors. This is the principle which underlies the whole system, and which may be varied, however, to the extent of the color shop, and giving combinations innumerable. Frequently it is the case that the less obvious the design is manifested, the more bewitching is the harmony; an end accomplished by the use of tints of the tertiary colors. As there is a great prejudice against any new effects, even if they are good, the painter had better follow the beaten track to some extent, than lead off too radically at his own expense, and if not quite sure of a combination, follow the plan of creating sufficient contrast by difference in scale, that is, by deepening the tone rather than by a difference in color.

Inside Work.

In decorating a room as good a way as any to begin is to start from the carpet, the prevailing hue of which we will suppose is in the scale of No. 8 on the diagram; here we have a red; the walls demand a blue, No. 16, but it had better be of a dull, greenish order, with some white and black. Have respect also to the pictures and articles of ornament which are to hang upon it or stand against it. A series of creamy tints and shades on the ceiling, interspersed, per-


 With the *Phœnix* brand of Pure White Lead, reliable colors and materials, you can be sure of good results.

haps, with some tones of citrine will balance the whole work and make a very pretty room. Sometimes, however, blue tones are objectionable on a wall. If this be the case, you can reverse the order, and put the blue on the ceiling and the yellow tints on the wall.

If the walls are to be papered, it is presumed this has been chosen suitable to the carpet, then start from the wall paper and strike a light tint of its complement; that is, take the general tone of the paper which will generally be found in its ground color, but not always. Having obtained an idea of the general cast of the paper, get its complement and use a light tint of it for the field or broad part of the ceiling. If there be a paper frieze, it ought to have been matched or harmonized with the paper; allowing this to be so, take the colors for the cornice above the frieze from it, so as to continue the cornice as if it were a part of the frieze. This method is the more usual way of treatment. Sometimes, however, the cornice is made as if it were a part of the ceiling, and colored to match it; the former is the better plan. In following the latter method put the darker shades of the frieze upon the lower part of the cornice, and the lighter shades upon the upper part; the cove of the cornice will generally bear some strong color. Usually one is found in the frieze (either use this or a color complementary to it). The center-piece of such a ceiling should be treated with the same colors as the cornice. Sometimes one or more members of the cornice moulding and prominent portions of the center-piece are much improved by a coat of gold or colored bronze. If colored bronzes are used, have them match, or be complementary to the ground color. This effect may oftentimes be got by using a light and bright stripe of a complementary color, or one suggestive of or in accord with prominent colors in the room.

In painting the wood-work it is usual to paint it in 2 tones of the wall color, or the prevailing tone of the paper. Say the panels of doors, the jambs and part of the base of the lighter tint, and trim with darker shade, with a stripe or stripes on certain beads or chamfered edges, with a bright complementary color or gold bronze.

It will easily be seen that specific directions can only be made according to circumstances. I may urge again, however, that it is safer as a rule, in a complementary treatment,

 The most select brands of pig lead alone are used in the manufacture of the *Phœnix* brand of Pure White Lead.

to dull the tints and tones pretty well. Rather err, if you err, on the side of quietness and modesty than on the reverse.

SELECTIONS FROM PROF. CHURCH.

The effect of colors with white, grey and black:

Yellow with White is rendered darker, less luminous, and less prominent, and acquires a faint greenish hue; the lighter the tone of the yellow, the less pleasing is the combination.

Yellow with Grey is rendered darker, less luminous, and, perhaps, a trifle more orange, when the gray is of about the same intensity or tone as the yellow. The combination is not satisfactory, but it becomes so when the grey is rather deep, the yellow then recovering brightness.

Yellow with Black is rendered lighter or paler, more luminous, and more prominent. The combination affords the most intense contrast, next to that of white with black. The blackness of the black acquires a somewhat bluish-violet hue, which has a tendency to enrich it.

Orange with White is rendered darker, and, perhaps, a trifle more reddish. The contrast between orange and white is much greater than that between yellow and white, and the combination is consequently more effective.


Orange with Grey, when the latter is pale, is darkened and reddened with deep tones of grey. Orange becomes more luminous.

Orange with Black becomes more luminous and yellower, the contrast is next in intensity to that afforded by yellow with black.

Red with White becomes more intense and of a deeper tone. The combination, as to intensity of contrast, is similar to that of green with white; being less decided than that of blue and violet with white, but more so than that of yellow and orange with white.

Red with Grey, where the latter is pale, becomes more intense, deeper, and occasionally acquires a slight bluish hue.

Red with Black becomes more luminous and slightly yellower.

 *The Phoenix brand of Pure White Lead is thoroughly corroded before it is ground.*

Violet with White affords a contrast of very decided character, owing to the great difference of tone between a full violet and white. The violet is rendered deeper in tone in this combination.

Violet with Grey. The distinctive color of the violet makes itself felt in this combination, which is a quiet and agreeable one.

Violet with Black affords an instance of the harmonies of analogy rather than that of contrast. The violet is enriched by its proximity with black, but the latter thereby acquires a rusty hue which takes away from its richness.

Blue with White constitutes a pleasing combination. The contrast is very decided where the tone of the blue is deep; the effect of white clouds in deepening the tone of the sky is a good example of one of the chief characteristics of the combination.

Blue with Grey. Grey enhances the tone and quality of blue, deepening it to a remarkable extent under certain circumstances.

Blue with Black. This combination resembles that of violet with black, but is less agreeable, especially where the blue is of a deep tone; light shades of blue are rendered paler and more luminous by contiguity with black.

Green with White becomes more intense and of a deeper tone.

Green is distinctly improved by the presence of white.

Green with Grey becomes deeper in tone.


Green with Black is rendered rather lighter in tone, and more brilliant; but the black suffers in purity, and becomes slightly tinged with a ruddy hue, the result of adding to the black red, the complementary color of the neighboring green.

On this same subject Chevereul has to say:

White surfaces are modified by contiguous colors, and so are black, the tone of the complementary color usually appearing.

Grey, between colors, helps to harmonize them by separating them.

Colors change their appearance under different circumstances. *Light* is one of the principal causes for such changes. Colors which are complementary in daylight *may not be so when seen in artificial light*, much depending on the kind of light used.

 *Linseed oil loses valuable qualities when it is bleached by the use of chemicals.*

Gloss and form also modify color.

The greatest change, however, to which colors are subjected, results from the effect of the colors with which they are put in contrast.

As examples of this:

Red placed in contrast with blue appears yellower.

Red placed in contrast with yellow appears bluer.

Red placed in contrast with green appears brighter and purer.

Red in contrast with white appears lighter and brighter.

Red in contrast with grey appears brighter. Thus the same red may appear to be different reds under the various conditions in which it is viewed.

When two colors do not look well together, separating them with white or black usually gives a better effect. The latter (black) often gives better results than the former. As an illustration: *Red and orange* do not appear well together, but if they be separated by *black* an agreeable effect is produced. Again: *White* makes *light blue* and *light red* harmonize better than it does *dark blue* and *dark red*, because the two latter colors present too great a contrast in tone—a result always to be avoided.

QUALITY OF COLORS. (Sir Christopher Dresser.)

Blue is a cold color, and appears to recede from the eye.

Red is a warm color. It is exciting. It remains stationary as to distance.

Yellow is the color most allied to light, it appears to advance toward the spectator.


At twilight blue appears lighter than it is; red much darker, and yellow slightly lighter. By some artificial light a pure yellow appears lighter than white itself, when viewed in contrast with certain other colors.

Black, white and gold are neutral as regards color.

When a color is placed on a gold ground, it should be outlined with a darker shade of its own color.

When a gold ornament falls on a colored ground, it should be outlined with black.

When an ornament falls on a ground which is in direct harmony with it, it must be outlined with a lighter tint of its

 *The Body and Fineness of the Phœnix brand of Pure White Lead is equaled by no other Brand of White Lead in the market.*

own color; thus, when a *red* ornament falls on a *green* ground, the *ornament must be outlined with light red*.

When the *ornament* and *ground* are in *two tints* of the *same color*, if the ornament is *darker* than the ground it will require outlining with a *still darker tint* of the same color; but if *lighter* than the ground, *no outline will be required*.

Selections from Sir Christopher Dresser, Ph.D., F.L.S., etc.


"A decorator is called in to beautify a house, and yet not one in fifty of the so-called decorators knows even the first principles of their art, and would not believe, were they told, of the power of the art which they employ. They place on the walls a few sickly tints, so pale that their want of harmony is not very apparent. The colors of the walls become the colors of the ceiling, the cornice and the doors, because they know not how to produce a harmony of hues; and the result is a house which may be clean, but which, in every other respect, is an offense against good taste. I do not wonder that persons here *in England* do not care to have their houses 'decorated,' nor do I wonder at their not appreciating the 'decorating' when they are done."

"Color, lovely color, of itself would make our rooms charming, but where are the priests who understand their mistress?"

We scarcely ever deal with pure colors, or their shades or tints. For this reason we have to avoid the use of our purest pigments in such quantities as render their poverty of nature manifest; and to use for large surfaces such tints as, thro' their subtlety of composition, interest and please. *A tint, the composition of which is not apparent, is always preferable to one of a more obvious formation.*

To do what I here mean, it is not necessary that many pigments be mixed together in order to their formation; *the effect of which I speak can frequently be got by two well-chosen pigments.*

By the co-mingling (not co-mixing) of colors (i. e., in small masses), a rich and bloomy effect can be got, having the general effect of a tertiary color of any desired hue. Thus, if a wall be covered with little ornamental flowerets, by coloring all alike, and letting each contain two parts of yellow and one part of blue and one of red, the distant hue

 *The body of the Phoenix brand of Pure White Lead is not ruined by the use of chemicals to bleach the oil.*

will be that of citrine. The same effect will result if the flowers are colored variously, while the same proportions of the primaries are preserved throughout. I can conceive of no decorative effects more subtle, rich and lovely than those of which I now speak.

Imagine three rooms, all connected by open archways, and all decorated with a thousand flower-like ornaments, and those so colored, in this mingled manner, that in one room blue predominates, in another red, and in another yellow; we should then have a beautiful tertiary bloom in each, a subtle mingling of color, an exquisite delicacy and refinement of treatment, a fullness, such as always results from a rich mingling of hues. The general effect being, the one appearing as olive, another as citrine, and the other as russet.

DESIGN (from Dresser).

Good ornament, good decoration of any character, have qualities which appeal to the educated, but are silent to the ignorant.


We must inquire into the general revelation which the ornament of any particular people or of any historic age makes to us, and also the utterances of individual forms.



In Egyptian ornament, as an illustration, take the lotus or blue water-lily, repeated over and over again in their ornament. Notice there is a severity, a rigidity of line, a sort of sternness in it. Length of line, severity of form, firmness of drawing, and subtleness of curve are the great characteristics of Egyptian ornament. The Egyptians were a severe people, their ornaments were all ordered by their priesthood; they were symbols of some truth or dogma inculcated by their priests. The lotus was their first spring flower, and presaged the coming harvest and plenty.

The winged globe was symbolic of the powerful protection afforded by the kingdom; it was ordered to be placed over every lintel or door-post. This figure Moses of old despised by the sprinkling of blood upon the same place. But we find no such thing as symbol-



 The value of a pigment depends upon its wearing qualities.

ism in *Grecian decoration*, the general expression of Greek art is refinement. The Greek Anthemion may be regarded as their principal ornament, but it must not be thought that the Greek ornaments and architectural forms present nothing but refinement, for this is not the case. Great as is the refinement of some of these forms, we yet notice that they yet speak of more than the perfected taste of their producers. For they reveal this fact, that their creators had great knowledge of natural forces, and the



laws by which natural forces are governed. Instance the Doric column, in *Roman ornament*. The materials of which their works were formed were considered rather than the shapes which they assumed.


They adopted a large part of the distinctive ornament of the peoples conquered by them.

The Romans, however, had the round arch as a primary element in the construction of their edifices, this was also Byzantine. Norman buildings again show us the round arch, and present us with such intersected arcs as would naturally suggest the pointed arch of later times, with which came the full development of Gothic or Christian architecture and ornament. Gothic ornament, like the Egyptian, is essentially symbolic. The triangle, the trefoil and the interlaced circles are symbols of the Trinity, the circles of eternity, three fishes, baptism, the chalice, etc.



But this passed to undue adoration, and thence, after the Reformation, into disuse. Then came a revival of classic learning, anything was preferred to the Gothic. Renaissance was based on the Roman remains, remodeled; it was a new decorative scheme of the same genus as the Roman.

I confess that all Renaissance ornament fails to awaken any feeling of sympathy in my breast. I enjoy the power and vigor of Egyptian ornament, the refinement of the Greek,

 **A White Lead may be Chemically pure and be valueless as a pigment.**

the gorgeousness of the Alhambraic, the richness of the Persian and the Indian, the simple honesty and boldness of the Gothic. But with the coarse Assyrian, the haughty Roman and the cold Renaissance, I have no kindred feeling. I must be pardoned for this feeling by those who differ from me in judgment.

Ornament always has arisen out of architecture, or been a mere reflex of the art principles of the building decorated."


These selections are made mainly to show that the proper ornamental decoration of buildings is largely dependent on architecture, and also that decorators are not at liberty to employ such figures as first come into their mind arbitrarily, but that the whole matter of ornament is subject to law, and to an educated person. Nothing more plainly shows a deficient education than the introduction of an ornament which properly belongs to one style of building into another, and a totally different style or order.

Modern architecture, however, revels in strange associations. It seems to borrow ideas from all past times and would fain invent a distinctively modern and American type, which, however, is supposed to be a hard task to perform.

HOW TO MEASURE A HOUSE FOR PAINTING.

There are three ways of taking painting work. First, by charging for the paint and other materials by the pound, and the time spent upon the work by the hour or day. This is called "by the day and pound" method.


The second way is by the yard or square; that is, by the square yard of nine square superficial feet, or the square of one hundred square feet, or 10 feet square. These two different ways of measuring prevail in different parts of the country, and those who have long been accustomed to either way like that way the best. Having myself been accustomed to measure by the square, I think that is the best, and have this to say in its favor—that having arrived at the number of square feet in a job, you simply set off the two right hand figures, and then, as a result, you have the number of squares the surface contained. The two figures you have set off being integral parts of a square or one hundredths. If your price is one dollar per square, then it is one cent per foot. As an example, suppose you have measured 2,978 square

 *Work done with the Phoenix brand of Pure White Lead will last four times as long as that done with cheap ready mixed paints.*

feet, set off the 78 (the two right hand figures); and you have 29 squares and 78 feet; price, 29 dollars and 78 cents; whereas by the yard you have first to divide your square feet by 9 and then multiply. There are $11\frac{1}{9}$ yards to a square.

The third way of taking work is by the job; in this all the figuring is done at first, and not as in the second case after the work is done. In this way the painter measures the work, and calculates the number of pounds of paint and the number of hours or days necessary to do the job. At least this is the primary way of getting at it, but old painters seldom do it this way; a long experience has taught them what it is worth to paint nine square feet, or a square yard, or one hundred square feet called a square, and he gets at the result very quickly. Now, of course, if all men measured alike, and had concluded on a similar rate and were honest, there would be no difference in bids for work, but it is very seldom indeed that this happens. This comes from very many causes arising from difference in measurement, difference in judgment, difference in work, difference in honesty of purpose. The system is a species of gambling any way. Either one party or the other is sure to lose or gain more than he ought to do.

The fairest way for both parties is to do work by measurement. The painter then gets fair pay for fair work, etc. Even the system of measurement, however, is sadly demoralized, there being no generally accepted rules for its practice. I can not do better than to let the different sections of the country speak for themselves. These several rules for practice of measurement have been adopted by responsible bodies of men, and by responsible members of those bodies. I did set out to harmonize and form from them an Eclectic system, but I have discovered it to be a harder job than I anticipated; and, besides, had such a system been formulated, it would have had no force or authority to cause its adoption generally, and would have resulted only in adding another disturbing element. I give these different rules then for what they are worth, and there is much worthy of consideration in all of them. I am looking forward to the time when an accepted national system will take their place; this result will probably occur through the medium of the Master House-Painters Association of the United States. The oldest is that of Philadelphia, dating from 1830, re-

 *The longer the Phœnix brand of Pure White Lead is exposed, the whiter it becomes.*

spectable from age alone, but more so from the names endorsing it.

Scale of Measurement Prices for Painting New and Old Work.

	Per Yard
New Wood Work, first coat.....	9 cts.
“ “ “ second coat.....	12 “
“ “ “ third coat.....	9 “
	<hr/> 30 “
Old Wood Work, first coat.....	10 “
“ “ “ second coat.....	10 “
	<hr/> 20 “
Plain Wall Work, first coat.....	10 “
“ “ “ second coat.....	12 “
	<hr/> 22 “
“ “ “ for each additional coat.....	10 “
For Sizing, each coat	6 “
For Sanding, four coats of paint and two of sand (scaffold extra).....	\$1.00
Weatherboarding, Lining Ceilings, Fences, and Brick Walls, first coat.....	16 cts.
Brick Walls, second coat.....	16 “
“ “ third coat.....	10 “
	<hr/> 40 “
Staining and Jointing Brick Fronts or Walls, one coat.....	\$1.00

FANCY COLORS.

French or Paris Green, two coats exclusive of groundwork...	45 cts
Chromo Green, one coat and each additional coat, exclusive of groundwork.....	15 “
Varnish, one coat and each additional do.....	16 “
For Graining, imitations of Oak, Walnut, Mahogany, Maple or Marble, and one coat of Varnish, from 50 cents to \$2 per yard, according to the finish of the work, of which the measurers shall be the judges.	

For Bronzing, Gold Bronze from 75 cents to \$3 per yard.

For Bronzing, Copper Bronze from 25 cents to \$1 per yard.


For Gloss Painting, 20 cents per yard for each coat, exclusive of the groundwork.

Of this work the measurer shall be the judge.

In case the employer shall furnish the material, the cost of the same to be deducted from the measurement price.

Unplained Boards and Roughcast Walls:

First coat.....	22 cts.
Second coat.....	18 “
Third coat.....	15 “
	<hr/> 55
Roofs, each coat.....	10 “
Kalsomining, each coat.....	10 “
Washing and Scraping Ceilings, per hour.....	50 “

 *The Phoenix brand of Pure White Lead dries hard, yet is elastic.*

MEASURER'S PRICE.

Half a cent per yard on all work measured.

Thirty-three and one-third per cent. to be charged on the cost of labor and material for all work done by the day.

GLASS.

For Glazing French and American Cylinder Glass:

New Glazing, including two coats on sash, fifty per cent. on cost of retail prices.

PLATE GLASS.

Fifteen per cent. on cost for Glazing.

Copy of Rules for Measuring Painting, from the original of March 1, 1830.

RULE 1.—Trap door, if painted both sides, not less than 27 feet Dormer cheeks taken up the roof, then the height of the front, and add for cornice one girth, then add one half for the other side. No Dormer front less than 20 feet above to be valued; cornice on slate cheeks allow $2\frac{1}{2}$ girths, add 1 foot for freth.

RULE 2.—No window frame shall girth less than one foot; outside shutters, add to girth for each panel from one-tenth to three-tenths; inside shutters, if paneled and 4 fold, 2 feet; if 6 fold 3 feet; inside of them, plain 4 fold 1 foot, 6 fold 2 feet.

RULE 3.—If the bulk or door be plain color, add from one-tenth to three-tenths to the girths for each panel, each side; if in two colors, give $1\frac{1}{2}$ the plain girth; if in three colors, give two girths; if in four colors, give $2\frac{1}{2}$ girths; if in five colors, give 3 girths; no allowance for panel.

RULE 4.—Pilasters, inside or out, door-jambs and frames in plain colors reded, taken together and doubled pilasters in three colors, give 3 girths; if four colors, $3\frac{1}{2}$; if five colors, give four girths. No door-frame shall girth less than one foot.


RULE 5.—For all wainscoting, add to the girth 1 foot five-tenths, for small pilasters or wainscoting 1 foot girth.

RULE 6.—No shelf to girth less than one foot; edges of shelves four-tenths; corner beads, five-tenths girth; corner strips and others, not less than one foot; pin strips with pins, 1 foot five-tenths girth; and cutting in sash to measure, five-tenths.

RULE 7.—Mo mantel shall measure less than double, and allowing for ornaments.

RULE 8.—No window casing to girth less than 1 foot; no wash-board less than 1 foot; no stair skirting less than 2 feet: surbase and washboard in all cases not less than 2 girths; and if steps and risers on steps, 2 girths.

RULE 9.—Three turned banisters on a step, 2 girths; two turned banisters on a step, $1\frac{1}{2}$ girths: three plain banisters on a step, $1\frac{1}{2}$ girths; two plain banisters on a step, $1\frac{1}{4}$ girths, including the hand-rail, and girth the banisters, perpendicular, plain string board one and five-tenths girth, and for scroll, 1 foot.

 This is because there are no chemicals used in its manufacture.

RULE 10.—All fences, risers, and ends of steps, plain girth; brush handles, plain color, shall girth $1\frac{1}{2}$; if tipped with other color, add one foot; gates, cellar-doors, screens, window-bars, etc., plain girth.

RULE 11.—All plain cornice to be 2 girths; for medallions, add two and five-tenths as carved; add 1 foot for bead molding freth; add 1 foot eave; course, 2 feet; bulks, 1 five-tenths; if the gutters be painted, add 1 foot; if the gutters be painted without the eave, give 2 feet; barge, 2 feet; backboard and bulks, 3 five-tenths; spouts, 2 feet.

RULE 12.—For weatherboarding, add for each lap one-tenth. In deduction, take the windows, doors, etc., in the clear; no deduction for key-stones. For shingle roofs, add one-tenth for each course.

RULE 13.—For plain Venetian blinds, two girths. For pivot Venetian blinds, two girths, and add one foot. For Venetian doors in colors, $2\frac{2}{3}$ girths.

RULE 14.—Lattice work, plain rails (not beaded), done on both sides, charge five sides, or $2\frac{1}{2}$ girths; if done on one side, charge three sides, or $1\frac{1}{2}$ girth; if beaded and painted on both sides, charge six sides, or 3 girths; if done on one side, charge $3\frac{1}{2}$ sides.

RULE 15.—Arbor strips not less than one foot; all over a foot, posts, etc., to be measured.

RULE 16.—All cornice over doors and windows to be measured as such. All moldings, such as egg, or any other carved work, to be measured running, and not less than one and five-tenths girth. The measurer shall value the caps, etc., that may be placed upon the pilasters.

RULE 17.—Walls when painted shall be measured plain; deductions taken in the clear. Cornices in rooms and entries measure separate; no inside cornice less than one and five-tenths. Ceilings, if ornamented, allowance to be made according to the finish.

RULE 18.—Fronts of galleries, $1\frac{1}{2}$ girth. Add for fret or chimer's molding, twice its girth. For egg molding, one and five-tenths. Pew-doors, inside and out, with end of the pew, shall be girthed from the top of the scroll to the door, and one foot added for the net girth. All capping of pews, etc., varnished, shall girth one foot. Organ fronts and other ornamental work, the measurer must determine.

RULE 19.—Doors, etc., grained, the same allowance for panels as for plain colors. If the moulding is bronzed, it is to be measured running with five-tenths girth; if carved molding, one and five-tenths girth.


RULE 20.—Palisade fence, observe the same rule as for banisters; and if tipped with other colors, add one foot.

The next is that of Pittsburgh, adopted by the Master Painters' Association of Allegheny County, and it also has a price-list attached.

PRICES FOR PAINTING AND GLAZING.

1.—SQUARE MEASURE.

Plain weatherboarding, close fencing, ledge doors, partitions, paling fences, etc. All common colors, viz.: white, light

 *The Phoenix brand of Pure White Lead is very Tenacious.*

yellow, slate, pearl, light drab or cream color, for each coat, per yard 8 cents.

2.—PANEL WORK.

Flush panel work, panel doors, recesses, etc., the above colors, for each coat, per yard 10 cents.
 The same in two colors 12 "
 The same in three " 14 "
 Striping after other work is finished, per foot, lineal measure 1 "
 For expensive or unusual colors, per yard, additional 1 "
 For each coat of varnish, per yard 12 "
 For each coat of shellac, " 12 "

3.—BRICK WORK.

First coat, per yard 15 cents.
 Second coat, " 12 "
 Third " 10 "
 Penciling, " 15 "
 Mastic or cement, first coat, per yard 20 "
 Additional coats, same as brick.

4.—INSIDE WALL PAINTING AND SHELVING.

First coat, per yard 12 cents.
 Second coat, " 10 "
 Third " 8 "
 Sizing, each coat, per yard 5 "

5.—MODE FOR SQUARE MEASUREMENT.


Weatherboarding, all edges measured. Partition joints, add half inch for each bead. Paling fences, begin at top of base, girth over fence and rails to top of base on other side; for length add half the girth of posts to length of fence. Post and rail fences, double the height; length same as paling fences. Graperies, same as post and rail fences, with one-half added. Panel doors, shutters and other panel work, begin at top, press line into all quirks and moldings to bottom, and in the same way for width. For all weatherboarding and walls, take out half the openings. Shingle or board roofs, measure all butts or edges. Trellis or lattice to be measured double. Venetian shutters, etc., one and one-half times. Open scroll or carved work to be taken as many times as in the judgment of the measurer it is worth.

6.—HARD WOOD FINISH.

Each coat filling equal to two coats varnish.
 Each rubbing with hair cloth or sand paper equal to two coats varnish.
 Each rubbing with pumice stone and oil equal to three coats varnish.

7.—STOPPING AND CLEANING.

Puttying new work, and old work where it is badly opened, charge one-half the price of first coat for the several kinds of work.

 Notice the Remarkable Fineness of the Phœnix brand of Pure White Lead.

8—LINEAL MEASURE.

Pilasters, architraves, frames, jambs, base, moldings, etc.				
Girths 1 to 4 inches, each coat, per foot.....				$1\frac{1}{2}$ cents.
" 4 to 6 " " " "				$3\frac{3}{4}$ "
" 6 to 8 " " " "				1 "
" 8 to 10 " " " "				$1\frac{1}{4}$ "
" 10 to 12 " " " "				$1\frac{1}{2}$ "
" 12 to 16 " " " "				$1\frac{3}{4}$ "

Larger dimensions in proportion.

Column mantels as above.

Panel jambs, door casings, etc., to be measured by the above rule.

Plain rosettes, add one foot to length.

Carved " " two feet "

Other carved or ornamental work at the discretion of the measurer.

9.—MODE OF MEASURING.

Begin at wall, press line in all quirks to bead at edge of jamb casing for girth.

For jambs of windows, take the inner sash rabbet and continue to corner bead, double the height and measure across between the jambs for length.

10.—STRING BOARD, ETC.

Plain, each coat, per foot.....	2 cents.
Bracketed, each coat, per foot.....	3 "
Carved, " "	4 "
Staff beads, " "	$1\frac{1}{2}$ "
Edges of shelves, each coat, per foot.....	$1\frac{1}{4}$ "

11.—CORNICES AND COLUMNS, PLAIN.

Girth, 1 to 2 feet, each coat, per foot	3 cents.
" 2 to 3 " " " "	4 "
" 3 to 4 " " " "	5 "
" 4 to 5 " " " "	6 "

Plain caps on columns add to length two feet.

Ornamental caps on columns, add to length four feet.

12.—CORNICES WITH BRACKETS.


Girth, 1 to 2 feet, each coat, per foot.....	4 cents.
" 2 to 3 " " " "	6 "
" 3 to 4 " " " "	8 "
" 4 to 5 " " " "	10 "
" 5 to 6 " " " "	12 "

Larger dimensions in proportion.

Dental Cornices same prices as bracket.

13.—MODE OF MEASURING.

For girths, begin at top, press line into all quirks and over each member to the bottom, and to the length add one-half the medium girth of the brackets.

 Notice the Greater Surface the *Phœnix* brand of Pure White Lead will cover.

14.—PRIMING OR TRACING AND GLAZING SASH.

	Priming or Tracing.	New Glazing.	Old Glazing and Glass.
8 x 10, each side, per light.....	1 $\frac{1}{4}$	4	15
9 or 10 x 12, " "	1 $\frac{1}{4}$	5	20
9 or 10 x 14, " "	1 $\frac{1}{2}$	6	25
10 or 11 x 16, " "	1 $\frac{1}{2}$	7	30
10 or 12 x 18, " "	1 $\frac{3}{4}$	8	35
14 x 24, " "	2	10	45
18 or 20 x 24, " "	3	14	60
22 or 24 x 30, " "	5	16	85
26 x 36, " "	6	20	1 15
30 x 40, " "	8	25
30 x 50, " "	10	40
30 or 40 x 60, " "	12	60
30 or 40 x 70, " "	14	75

For back puttying add one-quarter, and for beading add one-half to the above rates.

In new glazing, cost of glass not included.

All breakage at the risk of the owners, if glass is furnished by them. To all bills of glass furnished by the trade, 20 per cent. will be charged additional.

15.—SANDING.

First coat of sand equal to two coats paint.

Second coat of sand equal to three coats paint.

16.—GRAINING, SQUARE MEASURE.

Oak, not shaded.....	per yard,	35 cents.
" shaded.....	"	50 "
" root ".....	"	1 50 "
Ash on Chestnut, penciled.....	"	1 00 "
Walnut ".....	"	1 00 "
Mahogany, Cherry.....	"	70 "
Maple, Satinwood.....	"	70 "
Walnut or Ash, plain.....	"	60 "
Rosewood.....	"	1 00 "

17.—LINEAL MEASURE.


Girth, 2 to 4 inches, per foot.....	3 cents.
" 4 to 6 " "	4 "
" 6 to 8 " "	5 "
" 8 to 10 " "	6 "
" 10 to 12 " "	7 "
" 12 to 16 " "	8 "

Other members in proportion.

Varnishing the above, each coat equal to one coat paint.

Graining edges of shelves, per foot..... 1 $\frac{1}{2}$ cts.

Graining sash double the price of plain painting.

 The Eckstein White Lead Co. will be pleased to show their friends over their works.

18.—MARBLING, SQUARE MEASURE.

White.....	per yard, 75 cents.
Other kinds.....	" \$1 00

19.—LINEAL MEASURE.

All members from 4 to 8 inches girth, per foot.....	8 cents.
“ “ 8 to 10 “ “	12 “
“ “ 10 to 12 “ “	16 “
“ “ 12 to 16 “ “	20 “
Larger members in proportion.	
Each coat varnish to be charged the same as one coat paint.	

20.—DEDUCTIONS.

The price of any work measured and not specified in this book, shall be fixed by the measurer.

The measurer is hereby authorized to deduct from five to twenty per cent. from the price of any work that in his judgment is not first-class.

21.—FEES FOR MEASURING.

Jobs amounting to \$100 or less.....	5 per cent.
“ “ over \$100, and less than \$500.....	2½ “
“ “ \$500.....	2 “
Wages.....	\$3 00 per day.
Lead.....	7 cents.
Oil.....	65 “
Turpentine.....	50 “

PRICES FOR SIGN PAINTING.

22.—LETTERING.

On boards, plain up to 2 feet wide, per foot, lineal.....	20 cents.
“ one shade, “ “ “ “ “ “ add.....	25 p. ct.
“ two “ “ “ “ “ “ “	50 “
“ three “ “ “ “ “ “ “ “	75 “
“ in gold “ “ “ “ “ “ “ “	60 cents.

If letters are cut in, one-third additional.

Plain letters on brick, per square foot..... 25 cents.


The price of ground is included in the above prices. If ground is already prepared, deduct 25 per cent.

Smalting signs with bellows, per square foot..... 8 cents.

White lettering with gold shade, same as gold letters.

23.—GOLD SIGNS ON SILK.

1 to 3 inch, per letter	25 cents.
Large letters in proportion.	

 Use no more Turpentine than is necessary to make the paint work freely.

24.—DRUM OR COLUMN SIGNS, ZINC ON FRAMES.

In gold, smalted.....	per square foot,	\$2 50
“ shaded.....	“ “	3 00
“ plain ground, cut in.....	“ “	1 25
“ colored, “ and shaded, cut in.....	“ “	1 75

25.—ON JAPPANED TIN.

	GOLD.	PLAIN.
10 x 14, each, one line.....	\$1 50	\$ 75
10 x 14, “ two “.....	2 50	1 25
10 x 14, “ three “.....	3 00	1 75
12½ x 17, “ one “.....	1 75	1 00
12½ x 17, “ two “.....	2 75	1 75
12½ x 17, “ three “.....	3 50	2 50
14 x 20, “ one “.....	2 00	1 50
Each succeeding “.....	1 00	75

26.—ON MUSLIN.

Plain letters, per lineal foot.....	10 cents.
Colored “ “ “.....	15 “
Shading “ “ “.....	5 “

27.—LETTERING ON GLASS, IN GOLD.

From 1 to 3 inch letter, per lineal foot.....	\$1 00
From 3 to 6 “ “ “.....	1 50
Shaded in two colors, “ “.....	2 00
Blended and ornamental, “ “.....	2 50

28.—WINDOW SHADES.

Plain letters.....	per lineal foot,	20 cents.
“ black shade.....	“ “	25 “
“ black and colored shade.....	“ “	35 “
Gold “ black shade and lighted.....	“ “	50 “
Gold “ black & colored shade & lighted, “ “.....	“ “	60 “

29.—ENGRAVED METAL.

Zinc, per square foot.....	\$3 00
Brass, “ “.....	4 50
Nickel, “ “.....	5 50

30.—COLUMN SIGNS.

Plain black letters, per lineal foot.....	25 cents.
Cut in “ “ “.....	35 “
Gold “ “ “.....	40 “

31.—MISCELLANEOUS.

All signboards, boring of holes in iron, to be charged in addition to price for lettering. Putting up signs, where scaffolding is required, to be charged at the rate of fifty cents per hour for each man.

Louisville, Kentucky, also incorporates a price-list.

The Master Painters of House-work, in the city of Louisville, at a meeting held July 1, 1886, for the better regulation of the trade, did adopt and pledge themselves to adhere to the following Rules and Prices for the government of the Measurers and Valuers of all work under dispute:

RULES.

RULE 1.—Plain cornices, under one foot, girth one foot; if more than one foot, what it may girth, allowing for trouble in working in members; and, also, one-half to be added for all cornices over two stories high, and three-fourths for all over three stories high, for altitude.

RULE 2.—Cornice block and dental, three times the girth. Cornices on dormer, portico, and frontispieces the same as above.

RULE 3.—Cornices with brackets from two to three times the girth. When the brackets are fluted and finished with moldings or carved leaf work they shall be measured separate from cornice, and due allowance be made according to the judgment of the measurer. Barge-boards, water-spouts and gutters, one to two feet in girth.


RULE 4.—Paling and railed gates square measure; if the tops are of different color, six inches added to the height. Post and rail fences, railing to be girthed, posts taken separate. Iron fencing from one to four times the girth.

RULE 5.—All stone sills, fasciæ, window and door arches, or caps, from two to three times the girth. If the arches are carved or ornamental, the measurer shall allow what he may deem just and reasonable for the trouble of picking it on each one, say from three to six times the girth.

RULE 6.—Window frames, where painted on both sides, that is from the brick reveal around the inside jamb, including all the parting beads and the inside sash beads, two feet girth. When painting the outside only, one foot six inches allowed for the outside of the frame; and when painting the inside only, one foot girth for the inside of the frame. Sash measured square when it contains from four to six lights, adding four (4) inches to the height for the top and one meeting bar of the sash, by the width on both sides. Diamond or small size lights, double measure, if painted one color, but if the putty is blacked, or any other color, one side more must be added to the girth; and in the same proportion if only painted on one side. And if the sash are only oiled, as in old houses, the same as varnishing one coat. For all sash of one or two lights, to be measured one-half measure.

RULE 7.—Venetian slat-work, on inside or outside blinds, to be measured work and half-work, that is, one-half added to the girth. Lattice-work, double measure: one-fourth to be added when the openings of lattice are less than four inches.

RULE 8.—Weatherboarding, square measure; windows and doors

 *Materials which tend to dry paint also tend to destroy it.*

measured separate; corner-strips, if painted a different color, one foot allowed; rough weatherboarding and shingle roofs, double measure.

RULE 9.—All interior architraves, jambs, doors, base-boards, wainscoting, panel shutters, chair-boards, string-boards—plain or molded—to be measured actual girth measure. Interior brackets—cornices with same, carved or ornamental work, are to be measured according to Rules 3 and 5. All banisters, round or square, if not over six inches in girth, to be measured two heights by the length. Hand rails, actual girth by the length. Newels, girth by height. All banisters over six inches in girth to be allowed one time more than as before mentioned. This is for one color only: one-fourth measure to be added for each additional color.

RULE 10.—Painting on plastering measured square, and one-half openings deducted.

RULE 11.—Batten doors, shutters, partitions, gates and plank fences, measured square, and one inch for each bead added to the girth, allowing for battens two inches each in the height. Tin and metal roofs to measure square, two inches allowed for each rile.

RULE 12.—All stone and rough iron castings, from one and a half to double measure; verandas shall be measured, and complexity of design allowed for, according to the judgment of the measurer.

RULE 13.—All painting on brick shall be measured square, and the openings to be deducted in repainting only, and not in new work, that is to say, the actual openings which the sash or doors occupy, allowing for reveals; all openings above a second story are not to be deducted. If the stone or brick caps are painted a different color they shall be measured from one to two feet girth. Five per centum to be allowed on the aggregate amount of the work measured for puttying up and cleaning off.

RULE 14.—For all hands furnished by the day the painter shall be allowed 50 cents for each hand per day for use of brushes, etc.; 50 cents per day for use of stage; and four dollars per day for superintending.

LIST OF PRICES.


PAINTING AND FURNISHING PAINTS FOR NEW WOOD WORK.

Plain colors, done with lead or zinc:

For one coat.....	8 cents per yard.
For two coats.....	14 " "
For three coats.....	20 " "
Each additional coat.....	6 " "
For sanding, each coat.....	10 " "
Each coat, common color thereon.....	15 " "

IMITATIONS OF WOOD.

Fair Graining (oak and walnut), and one coat of varnish only.....	40 cents per yard.
Fair graining (oak and walnut), and two coats of varnish only.....	50 " "
Best graining (oak and walnut), and one coat of varnish.....	45 " "
Best graining (oak and walnut), and two coats of varnish.....	55 " "

 On outside work use plenty of oil; the less dryer the better.

Revarnishing old work same as for pointing:

One coat, 10 cents; or two coats, 18 cents.

Imitations of mahogany or rosewood, and two coats of varnish.....	75	cents	per yard.
Staining on pine or hard wood.....	3	"	"
1 coat of varnish or hard oil finish.....	10	"	"
2 " " " " ".....	18	"	"
3 " " " " ".....	26	"	"
If dulled.....	10	"	"
For extra finish hard wood, filled, and two coats of varnish or hard oil finish.....	35	"	"
For extra finish hard wood, filled, and three coats of varnish or hard oil finish.....	45	"	"
For rubbing to a finish with pumice-stone and oil or water.....	25	"	"
For shellac, one coat.....	10	"	"
For shellac, two coats.....	20	"	"

If white pine (new work) is defaced by pencil marks or dirt (finger marks, etc.), 5 cents per yard to be added.

For tinting cornices, 5 cents per running foot for each member tinted.

For bronzing, 5 cents per running foot for each member bronzed.

Center pieces from \$1.00 to \$4.00 each, including bronzing.

Inside walls repainted, same as for painting brick work, old or new.

Stippling, 5 cents per yard.

PAINTING ON OLD WOOD WORK, INSIDE.

For one coat.....	9	cents	per yard.
For two coats.....	14	"	"

OUTSIDE WOOD WORK, BADLY WEATHER BEATEN.

For one coat.....	10	cents	per yard.
For two coats.....	15	"	"

PAINTING NEW BRICK WORK IN COMMON COLORS.

For one coat.....	10	cents	per yard.
For two coats.....	18	"	"
For three coats.....	25	"	"
Penciling.....	10	"	"

REPAINTING OLD BRICK WORK IN GOOD CONDITION.

For one coat.....	9	cents	per yard.
For two coats.....	14	"	"

GLAZING.

8 x 10 to 10 or 12 x 14, 2 cents per light.


11 x 15 or 16 to 12 x 20, 3 " "

14 or 16 x 22 to 16 x 24, 5 " "

All sizes above these to be charged 3 cents per square foot, and double the above prices for glazing show-cases or standing sash.

Twenty-five per cent. to be allowed for risk of breakage if painter furnishes glass.

When the glass is beaded the glazing shall be one and one-half the price. If back-puttied, one and one-fourth the price.

 Three thin wear better than two thick coats of paint.

MEASURERS.

The measurer to be allowed 2 per cent. for all bills under five hundred dollars; 3 per cent. for all bills over three hundred and under five hundred dollars; and 4 per cent. on bills over one hundred and under three hundred dollars; and five dollars on all bills under one hundred dollars.

Adopted July 1, 1886.

St. Louis, Mo., has a set of rules very similar to that of Louisville, according to my memory.

The M. P. Ass'n of San Francisco and the Pacific Coast have a very full set.


RULES FOR MEASURING PAINTERS' WORK.

RULE 1.—All stone coping, verge boards, waterspouts and gutters, plain dormer cornices, plain cornices and boxing; stone fascias, window and door arches and sills, tin edgings, valleys and flashings to chimneys and other walls that do not girth more than one and a half feet, to be allowed three feet girth.

RULE 2.—All middling size plain cornices with fancy or quirk moldings, six feet girth. All large size plain cornices with fancy or quirk moldings, nine feet girth. All intermediate sizes in the same proportion, according to trouble. Dormer cornices in the same proportion. Block and dental cornices of middling size, nine feet girth. If large and otherwise ornamented, twelve feet girth. If very large and richly ornamented with modillions, leaves, etc., fifteen feet girth. Dormer cornices the same, according to ornament. And if any of the above cornices have friezes and architraves, in order to form a full entablature, extra allowance according to size and ornament.

RULE 3.—Plain door jambs, in nine or fourteen inch walls, one foot six inch girth. Paneled door jambs in nine or fourteen inch walls, two feet girth. Paneled door jambs in eighteen or twenty-two inch walls, three feet girth. Imposts the same girths as the jambs. All other plain and paneled door jambs in the same proportion, according to size and trouble. All fancy sash, three measures on the outside and double measure on the inside of the sash. Pilasters and columns to front doors, etc., according to size and ornament.

RULE 4.—Window frames, when painted on both sides, that is, from the brick, reveal around the inside jambs, including all the parting beads and the inside sash bead, two feet girth. When painting the outside only, one foot six inches allowed for the outside of the frame, and when painting the inside only, one foot girth for the inside of the frame. The backs of the frames, if boxed and planed, two feet girth. Other frames, not boxed, but planed, one foot girth; if rough, two feet girth, and if boxed frames are rough, three feet allowed for the girth. Sash measured square, adding four inches to the height for the top and one meeting rail of the sash, by the width on both sides, if painted all of the same color; but if the putty is blacked or any other color, one side more must be added

 For two coat work the *Phoenix* brand of Pure White Lead is without equal.

to the girth—and in the same proportion if only painted on one side. And if the sash are only oiled, as in old houses, the same as varnishing or one coat work.

RULE 5.—Venetian shutters and the common kind of Chinese railing, double measure of plain work. Chinese railing and lattice-work, with the openings less than four inches, three measures—that is, six heights by the length. Fancy iron railing and large turned balustrading, closely set together, as on tops of houses, etc., four measures—that is, eight heights by the length. Wire work the same as sash (square). Outside blinds four times the surface measurements of plain work.

RULE 6.—Paling and railed gates, three heights by the length, besides girthing the rails and posts, if done with one color; but if the palings are topped with another color, two feet allowed for that color, adding the washboard, according to quality and width.

RULE 7.—All posts and railed fences to be girthed, and one-half more added to the girth. And all narrow strips and posts to summer houses and arbors to be one foot six inch girth each; and the rafters to awning frames three feet girth each, and the other posts and top-rails, two feet girth. The housing to awning, when painted inside and out, four feet six inches girth by the length.


RULE 8.—Window bars of from four to six inches apart, measured square, the same as sash, on both sides; but if close, like the grating to areas or cellar windows, double measure, the same as Venetian blinds.

RULE 9.—Rough casting, freestone, brick work, old sanded work and mastic work, shall be measured the same as other work, allowing one foot in girth extra for the reveal of the frames. If the stone or brick caps or arches are or are not painted the same color as the wall, there shall be no change from the above rules; but, if they are painted of a different color from the wall, they shall be called from one to two feet girth—the price according to color and number of coats of that color. If the stone sills are done with a different or with the same color as the wall, they shall be called from one to two feet girth, according to color and number of coats. Stone and brick fasciæ and water tables, etc., if done with the same color as the wall, shall be measured in with it; but if with a different color, they shall be measured the same as stone sills, etc.

N. B. No reference is to be had to the above rules for measuring stone fasciæ, etc., where the walls are not painted. All rough brick work shall be measured an additional quarter surface.

RULE 10.—All roofs measured square, and one inch for the butts and one inch for the edge of each shingle added to the measure. Old roofs, rough weatherboarding, and all other rough work, double measure.

RULE 11.—Batten doors, shutters, gates, and plank fences measured square, and one inch for each bead added to the girth, besides girthing the rails and posts of the fence, and the thickness of the battens, and double the thickness of the ends of the doors and shutters. Capping to fences measured separate according to size and ornament. All weatherboard and rustic to frame houses, one and a quarter measurement; a'l window sashes two measurements, and all projecting parts measured as in rule 2.

 **Buy only Phoenix brand of Pure White Lead and pure materials for mixing your paint, good work is then assured.**

RULE 12.—Balusters to piazzas and outside steps and porches, round or square, to be measured three heights by the lengths taken from the center of the top rail to the center of the under part bottom rail, and two feet girth added for the fascia; the floor, ceiling, and steps measured square, and the posts above the rail measured separate at two feet girth of the common kind; but if the columns or posts are large or paneled, or otherwise ornamented, they must be measured as shown in rule 2.

INSIDE WORK.

RULE 13.—Plain cornices, if not more than one foot girth, two feet allowed; if more than one foot girth, three feet allowed; if two feet girth, four feet allowed; if three feet girth, six feet allowed; if three feet girth and ornamented with leaves and modillions, etc., twelve feet allowed for the girth; and if extra heavily ornamented, extra allowance of measurement in proportion.

RULE 14.—Balusters with not more than two to a step, measured three heights by the length; if three balusters to a step, four heights by the length, measuring down the longest baluster, and the rail measured separate, if plain, at one foot girth; if ornamented rail, from two to three feet girth, according to the style of rail.

RULE 15.—Plain string board, two feet, with plain bracket, three feet girth; with open bracket, four feet girth; open bracket with carving or other ornament, six feet girth; and if extra heavily ornamented, to be measured additionally, as above.

RULE 16.—All plain trimmings, as double beads, moldings, square or sunk casings, and single architrave, etc., one foot girth.


RULE 17.—Plain double-faced architrave and small plain pilasters, one foot six inch girth; large double-faced architraves with fancy moldings and all of middling size, and common worked pilasters, two feet girth; and all other work of this class to be measured in proportion to this measurement.

RULE 18.—Large, deep, quirked pilasters, sunk or raised in the center, or plain moldings and Gothic beads in the center, will be two feet six inch girth. Deep quirked, large pilasters, with Gothic reeds, fluting or deep reeding in the center, three feet girth; large, deep quirked pilasters, with deep fluting and fillets or snipe-bill, with Gothic reeds in the center, four feet girth; and all other fancy pilasters with composition or carving, in the same proportion, according to trouble.

RULE 19.—Corner beads, square plinths and garret casings and strips, one foot girth. Common, beaded or small molded washboards, one foot girth.

RULE 20.—Broad plinths, with quirk base-moldings, two feet girth, and the same on steps, one foot extra. And for the largest sized plinths, with sub-plinths and large quirk moulding, three feet girth, and the same on steps, one foot added to the above.

RULE 21.—Panel work, either square, framed or scribed molding, to be measured square, and two inches in height and two inches in width for each molding allowed extra on both sides. Double worked doors, etc., with quirked moldings, measured square, and

 *The Phoenix brand of Pure White Lead will stand any test to which it can be put.*

four inches in height and four inches in width for each molding on both sides, and add half measure to double worked panel worked widow shutters.

RULE 22.—Edges of plain shelves, three inch girth; beaded or otherwise, six inch girth.

RULE 23.—Panel door jambs in nine inch walls, two feet girth; panel door jambs in fourteen inch walls, two feet six inches girth; plain door jambs in fourteen inch walls, two feet girth; jambs in stud partitions, one foot girth.

RULE 24.—All rough iron castings double measure to that of wood.

RULE 25.—Boxing to full trimmed windows all around and down the plinth, if paneled, three feet girth; the same not paneled, two feet girth. Inside folding shutters, double worked with quirk mouldings on both sides, and divided in the middle, to be double measure of other panel work. Inside folding shutters, plain on one side, measure and a half; and if plain on both sides, or with scribed moldings or square framed, two feet girth for each fold—that is, one foot for each side.

RULE 26.—All inside pivot shutters, if in four folds, shall be measured eight surfaces, and with five folds an additional measure to be allowed.

RULE 27.—Painting on plaster walls shall be measured square. Ceilings shall be measured square, and from one-fifth to one-third added to the measurement. Cornices as set down in Rule 14.

RULE 28.—All T and G boards from two and a half to three and a half inches in width, will be measured in ceilings at two and a half measurement, and in partitions double measurement. From three and a half to six inches: on ceilings, one and a half measurement; on partitions, one and a quarter measurement.

RULE 28.—All work not herein mentioned, to be measured in accordance with these rules, as the measurers of this association may determine to be just and equitable.

LIST OF PRICES.

PAINTING AND SANDING.


Outside Work.

1 coat, New work.....	11 cts. per yard.
“ Old work.....	15 “ “
2 coats, New work.....	25 “ “
“ Old work.....	25 “ “
3 coats, Old or New.....	35 “ “
4 coats, “ “.....	45 “ “

In two colors, ten cents per yard additional; for each additional color, 5 cts. per yard. Where vermillions, lake or other extra fine colors are used, an additional charge will be made.

SANDING.

2 coats paint, 1 coat sand.....	35 cts. per yard.
3 “ “ 2 coats sand.....	60 “ “
1 coat over sanded work.....	22 “ “
2 coats over sanded work.....	32 “ “

 For durability and whiteness, the *Phœnix* brand of Pure White Lead is without a peer.

Rough brick work, freestone, rough casting and mastic work, same price as over-sanded work.

For penciling brick work, 15 cts. per yard.

Where the painter cleans off new work after plasterers, he shall be allowed five per cent. upon the bill.

PRICES OF COLOR PER POUND.

All plain, mixed paints, 15 cents per pound. All other mixed paints according to tints. This refers to colors already mixed ready for use. In furnishing paints by the pound, $7\frac{1}{2}$ pounds shall be charged for each gallon of oil or turpentine. In doing work by the day, the master painter shall be entitled to \$1.00 per day on the man, for work done in the city or town where he resides. Day work at a distance will pay \$1.50 per day profit on all men employed, in addition to traveling expenses, and also time consumed while traveling to and from the job. When the master painter leaves town for the purpose of superintending work in the country, he shall be entitled to receive \$10 per day in addition to traveling expenses.

HOUSE PAINTING—PLAIN COLORS.

Inside Work.

For 1 coat or priming on wood.....	12 cts. per yard.
" 2 coats, rubbing, puttying, etc.....	30 " "
" 3 " " " " ".....	40 " "
" 4 " " " " ".....	50 " "

For Finishing in Gloss.

5th coat, half zinc and half lead.....	\$0 65 per yard.
6th " all zinc.....	80 "
7th " gloss.....	1 00 "
8th " ".....	1 15 "

Party Colors.


2 coat work in two colors.....	40 cts. per yard.
" " " ".....	50 " "
" " " ".....	60 " "
For each additional tint.....	10 " "

WALLS.

Tinting in Oil Colors.

1 coat work, plain color.....	10 cts. per yard.
2 coats " ".....	20 " "
3 " " ".....	30 " "
4 " " ".....	40 " "
5 " " ".....	50 " "
6 " " ".....	60 " "

Where two colors are used on walls, 10 per cent. per yard additional.

 In ordering White Lead order the Old Reliable "Phœnix" brand.

IMITATIONS OF WOOD AND STONE.

Common graining, 1 coat varnish.....	30 cts. per	6
Fair " 1 " "	40 " "	6
Fair " 2 " " rubbed down.....	60 " "	6
Best " 1 " "	70 " "	8
Best " 2 " " and rubbed.....	90 " "	

MARBLING.

The same as the prices under the head of wood and stone, according to quality and the work in both cases, to be measured as plain painting in addition to the prices already charged for marbling or graining.

Special rates for whitening, tinting, etc.

VARNISHING AND POLISHING.

New work, common filled, 2 coats rubbing, rubbed and polished.....	\$1.00 per	
For fair, filled, 3 coats rubbing, rubbed and polished.....	1.22 "	
For best quality work.....	1.50 "	
Floor work, common filled, 1 coat shellac, oil or flat finish.....	40 cts. per	
For fair, filled, 2 coats shellac, rough rubbed, oil or flat finish	50 "	
For best quality of work in polish or flat finish.....	75 "	
Staining borders on floors.....	\$1.00 per	

To be measured according to rule for inside work. An extra allowance will be made for time in preparing old varnished work for puttying old floors.

GOLD SIGNS ON ZINC, SMALTED, OVER TEN FEET.

6 inch letters.....	\$.50.	per lineal	ft.
8 " "60	" "	
12 " "70	" "	
18 " "	1.00	" "	


WOOD SIGNS, SMALTED IN GOLD.

24 inch letters.....	\$2.00	per lineal	ft.
18 " "	1.50	" "	
12 " "	1.00	" "	
8 to 10 inch letters.....	.80	" "	
4 to 8 " "70	" "	

Every inch over 24 inches, ten cents extra.

CARVED SIGNS IN GOLD.

Ten cents per inch extra over wood signs, plain.

 The "Old Reliable" Phœnix brand is sold on merits.

SIGNS ON ZINC, COLOR LETTERS, PLAN GROUNDED OR SMALTED, OVER FIFTEEN FEET.

to 8 inch, plain.....	\$.20
to 8 inch, one shade.....	.25
to 8 inch, extra shades.....	.30
to 15 inch.....	.30
Five cents extra for each shade.	

WOOD SIGNS, COLOR LETTERS.

Same as on zinc.

LETTERING ON GLASS.

12 inch letters, for over ten feet.....	\$1.00
“ “ shaded, one color.....	1.25
“ “ two colors.....	1.50
Fancy shaded.....	1.75
to 8 inches, over 10 feet.....	.90
“ “ one shade.....	1.10
“ “ two shades.....	1.30
“ “ fancy shading.....	1.50

All lettering inside of ten feet, fifty cents per foot added.

LETTERING ON GLASS IN COLORS.

Over ten feet.....	\$.35
shaded.....	.40
Fancy shading.....	.50

WHITE METAL SIGNS, PER RUNNING FOOT, ONE LINE LETTERING.

Window plates, 9 inches.....	\$1.25
“ “ 10 and 12 inches.....	1.50
Over 12 inches, \$2 per square foot.	

DRUM OR SIDE SIGNS.


Two feet square and over, \$2.00 per square foot.
Under two feet square, according to work thereon.

BRASS SIGNS.

Window plates, 9 inches wide, \$2.50 per running foot.
Ten to 14 inches, \$3.25 per running foot of one line.
Brass drum or side signs in brass, \$3.50 per square foot.
Altering signs by piecing them, \$2.00 per square foot, and 25 cents per running, for jointing.

ESTIMATING WORK.

To estimate correctly a painter must know what a square of one hundred feet or a yard of nine feet can be painted for; one, two or three coats, as work generally goes, on the average. He must then get the *actual superficies* of the work to be painted (the outside of a house for instance), its


 *The Phoenix brand of pure White Lead is not a "patent process lead."*

height, length and breadth, and if there be several heights measure each by itself; but getting a *true measure* of the whole house in superficial feet.

Now let him notice the condition of the job, and whether better or worse than ordinary; or whether it be more or less difficult of access. He can then figure up the whole price per square or yard at the rate he has, in his judgment, settled upon.

If it be the inside of a house, pursue substantially the same course. Get the measurement, first of the windows then the doors, including casings; then the stairways; then the base; then closets and any other parts not enumerated. In regard to windows, count the number and different sizes of full trimmed ones by themselves, measure one, then count the number like it and multiply. In the same manner do with the doors, and so having obtained the number of square feet in the job, consider now at what price you can do the work. Here you have need of good judgment; if there be any thing peculiar about the work, make allowance therefor, pro or con. If you make an error in judgment you may either lose money or lose the job. Some do the work of estimating a little different from the above, and make allowance for extra work or trouble when measuring. The cornice, for instance, they will girth from one and one-half to three times its actual measure, according to the extent of time or difficulties in their judgment there will be in doing the work. Blinds they may measure one and one-half times, and so with picket fences and lattice work; some measure lattice work double; others again only allow a little for window openings with large lights; not with good reason, however, for there is a good deal of trouble in getting around windows sometimes, and then the glass must be kept clean, and, perhaps, a little puttying will have to be done.

In short, to estimate intelligently on a job, you must know just how many square feet there are in it, and if there be any peculiarities whatever which you consider as extra to ordinary work. The above being determined, and you know what a square or a yard is worth done in the ordinary way, you are prepared to give an intelligent and honest bid.

 The Phoenix brand of Pure White Lead is manufactured by means of machinery, much of which is patented by The Eckstein White Lead Company.

TO CALCULATE SQUARE MEASURE.

The proper way to calculate square measure is by duodecimals or cross multiplication.

RULE.—*Feet multiplied by feet give feet.*

Feet multiplied by inches give inches.

Inches multiplied by inches give seconds.

Seconds multiplied by seconds give thirds.


12 thirds make 1 second, 12 seconds make 1 inch, and 12 inches 1 foot.

To measure a door, for example :

Take your tape measure, begin we will say on the inside of one of the casings, run it across the casing, taking in every formation of it wherever the paint goes ; follow across the door, including both sides and both edges ; then extend across the jamb and across the outside casing ; now leave off, and continue your measurements to the other two casings and the jamb between them ; this will give you the width of both sides of the door, together with its casings ; this we will suppose to be 8 feet 10 inches. Put this down. Take now the height of the door and upper casing on one side, including half of the jamb, and suppose this to be 8 feet 2 inches. Put this down under the other ; feet under feet and inches under inches, thus :

$$\begin{array}{r}
 8. 10 \\
 8. 2 \\
 \hline
 1. 5. 8 \\
 70. 8 \\
 \hline
 72. 1. 8
 \end{array}$$

Begin with the lower figure of the inches on the right hand, and say twice ten are twenty (inches multiplied by inches give seconds), therefore, twenty seconds is 1 inch and 8 seconds ; put the eight down to the right of the inches and carry one ; continuing to the left, say twice 8 are 16, feet multiplied by inches give inches ; consequently we have 16 inches, and 1 inch which was carried from the last makes 17 inches, which are equal to 1 foot and 5 inches. Put these figures down in their proper place, and proceed now from left to right (which is why it is called cross mul-

 *White Lead made by the old Dutch process method is opaque and has great body.*


tiplication); 8 times 10 are 80 (inches multiplied by feet give inches); 80 inches are 6 feet and 8 inches. Put the 8 in its proper place in inches under the 5, and proceed, carrying the 6 feet to the next; 8 times 8 are 64 (these are feet, and feet multiplied by feet give feet); 64 feet added to the 6 feet carried forward is 70 feet. Put this down in its proper place under the 1 foot, and add both lines together as in ordinary multiplication, the result is the exact measure of both sides of that door and casing, namely: 72 feet 1 inch and 8 seconds. The fractions may be dispensed with if you have only a few, but if you have some hundreds, as in an hotel, they become an important matter.

To ascertain the superficies of an angle—say the gable of a house, take the width of the base or the width of the house, and multiply this by the height from the top of the post to the peak; then take one-half of the product for one gable, and as the rear is generally as high as the front the same result may stand for both. Or, if you can not get up to measure the height from the post to the peak (as most shingle roofs are what are called quarter pitch), measure the width of the house, and take one-fourth of the width for the net height, add to this the girth of the cornice, and you will have the proper height, which when multiplied by the width of the house will give the superficial feet. All other angles are to be measured in the same way, as, for instance, the sides of front steps which are closed into the ground. To do this only the net or exact surface to be covered is necessary.

HOW MUCH PAINT AND HOW MUCH TIME.

These are both uncertain quantities, and both depend largely upon the condition of the work, and also upon the condition of the workman and upon his skillfulness, as well as upon the condition of the paint and upon the weather. Very cold weather will thicken paint and make it harder to brush out, but do no other harm; but with very many *ready mixed paints* it will *stop working of them altogether*, for the reason that *being mixed largely with water, they will freeze*.

A painter is somewhat amused at the statements made as to the covering capacity of the various ready mixed paints on the market. One will cover two hundred square feet, two coats


 *White Lead made by the new "quick process" is crystalline, and transparent like ground glass.*

to the gallon; another, two hundred and fifty feet, two coats; and another, three hundred feet, two coats; all of which seatements are doubtless true, *provided the power at the end of the brush is great enough.*

Personally, I have no objections to mixed paints, only I think they should be made either out of pure goods, and mixed as a first-class painter would mix his paint for a job; or they should be sold for just what they are, their composition being stated on the package. A purchaser would not then be deceived; he would know then whether he was getting the *best quality of paint or only a substitute for pure goods.* The mixed paints of to-day are made out of the cheapest materials, such as are used to adulterate lead paint with. They are sold at prices for which honest goods could be bought, and which, when mixed and used, would make a lasting job. Besides, mixed paints contain strong alkalies, potash, soda, etc., which are a necessary part of their composition, in order to make the large amount of *water* they contain mix with the small amount of oil entering into their composition. *These alkalies ruin* any surface for painting over in the future with pure goods, and as it only takes a short time for these "mixtures" to begin to look shabby, and finally cease to be any protection to the surface covered, if painted again with honest paint, without burning the remains of the former coating off—a poor job is almost sure to follow.

The fact that the colors are *claimed* to be ground in these mixed paints would amount to nothing, even if it were a fact that such a statement were true; for the oil colors now to be had are as finely ground as is possible, and mix as readily as can be desired with their prepared base.

The sole advantage, then, that mixed paints have, is in their being mixed ready to be "put on." *This is their only legitimate recommendation,* and I think that if those who consume them only knew *how easy it is to mix paint, and make it any color or shade desired,* they would much prefer to buy their materials, and do their own mixing. They would then know that they are *not being imposed upon*; that they are getting full value in return for their outlay, and are not paying for *water* and other substances almost as cheap when put up in the form of "mixed paint," *the price which lead, oil and turpentine command in the market.* Let them buy their own

 *The Phoenix brand of Pure White Lead is manufactured by the Old Dutch Process.*

materials, and put the profit the manufacturers of these mixtures make into their own pockets. For such, however, as desire to make their own "mixed paint," in order to do a cheap job, on page 47 will be found a receipt for making an article much superior to any on the market to-day; while its cost is less than most of the "mixtures" called paint.


One object of this book is to show those who do not already know it, how *easy* it is to mix paint, and to teach them that the art of mixing any tint or shade desired is not such a difficult trick to learn at all.

HOW MUCH PAINT REQUIRED.

New wood work will take more paint than work which has been painted before, unless it be badly weatherbeaten, is old, and very dry, in which case it will take more than new work. To put on *two coats* of paint requires from 6 to 9 lbs. of paint for every 100 square feet; 7 lbs. is probably about the average. The third coat requires about 3 lbs. more. It is generally conceded that *three thin coats are better than two heavy ones*. An old maxim with painters is: "*Put it on thick and rub it out thin.*" Remember that all pigments are originally dry powders, and that for outside work especially, *the oil is the most important factor for durability*. This, then, should be of good quality, and plenty of it. *The first coat on new wood should have more oil in proportion to 100 lbs. of lead than is put in for the after coats; say, perhaps, 6 or 7 gals. to 100, even more than this if the work be very dry*, while the second coat may only need 5 gallons. This, however, is on the basis of pure lead. In making an approximate estimate as to the amount of paint required for a job, remember that *a gallon of linseed oil weighs 7½ lbs.*, therefore, estimating that the work will take 6 gals. of oil to 100 lbs. of lead, *every 100 lbs. of lead will make 145 lbs. of mixed paint*, the ground pigments for tinting perhaps making it 150 lbs.—or 20 gals.

HOW MUCH TIME TO ALLOW.

The amount of surface which one man can cover in a day depends upon circumstances. To such an extent is this the case, that I have known a man work as hard to do 200 feet of work, as the same man at another time and on other and very plain work did to paint 1800 feet, the difference


 *The Old Dutch Process is the only way to make the best White Lead.*

being, in this latter case he used his "locomotives" more. On the average of plain ordinary work, probably 1000 feet is about as much as most men will do. I speak, of course, of the day of 10 hrs.

TO PUT ON PAINT ARIGHT,

Requires that the surface be covered all over, equally thick or spread out even, crossing it or manipulating it any way to get it spread out equally thick all over, and then laying it off smoothly by lightly drawing the brush all over one way, the way of the grain of the wood as a rule. I am of the opinion that the difference between a good and skillful workman and a poor one lies largely in this, a skillful man *brushes his work all that is necessary, but not a draw more.* That is, he knows when his work is done right, after which he leaves it for another place, while a poor workman brushes eternally without any object, thus tiring himself and wearing out his brushes for no good. As a general principle, *the quicker paint is laid on evenly and smoothly the better is the work*, especially in flatting. But no saving of time will compensate for "holidays" or "runs." Paint can not be put on aright unless the work is in a right condition to paint over, that is, it must be *dry, smooth and clean.* Nothing in the way of materials or workmanship will compensate for painting over wet or damp wood. In this case paint helps to rot wood rather than preserve it, for this reason, that the thing which will keep dampness out will keep dampness in, and no wood will rot without dampness. This is the main trouble to guard against in freezing weather. Heat is indispensable to doing a good job of inside work in cold and damp weather, especially on walls.

It is the carpenter's place to leave his work smooth, but it ought to be sand-papered and dusted off well by the painter after each coat. *Outside work* ought to be puttied after the priming is on. *Inside work* may be puttied first; if it is to be *white or light colored* it ought to be *shellacked* all over first; for *dark colors* it is better *without shellacking*, unless there are knots or rank, pitchy places. Gold leaf is said to keep in such matters better than shellac. For inside work intended to be flat the first coat should be largely composed of oil, only flat the last coat.

 In mixing the *Phoenix* brand of Pure White Lead use **MORE OIL** than with any other brand.

TO MIX PAINT.


Having selected your color, take your lead from the keg and break it up rather stiff, i. e., by adding a little oil, then add your color constituents or staining colors a little at a time, until you get the exact shade wanted, keeping the mixture a little lighter, if anything, especially if you are using some of the dry colors which are naturally fine, such as Prince's or other mineral colors, Brandon Yellow, Lamp Black, etc. Large packages of lead should be "broken up" as soon as opened by running a short, diamond-shaped paddle through the center of the keg to the bottom, and then by means of it, giving a rotary motion to the contents.

If the package is an old one, and the staves have absorbed much of the oil, making the lead stiff and dry, it is well to loosen this first by forcing the paddle down at various points around the sides before proceeding as above.

Ground colors are being sold now at a very small advance on the cost of the dry article; they are better, for with these you can be more certain that your color will not "work out" different from your mixing. *All paints should, however, be strained through a fine wire strainer. Mix up enough to do the job,* especially when you come to the last coat. A good painter, however, will not mix up much more paint than he needs. After being thoroughly mixed, put in your dryer; part of this, however, may be mixed with the thinners. The dryer should be *the best article*, as much depends upon it. A good liquid dryer should mix perfectly with oil, and should *properly dry paint* when added in the proportion of $\frac{3}{4}$ of a pint of dryer to a gallon of oil, if the weather be warm, even less will be better for the paint, but if the weather is cold and damp, or you are afraid of rain, dust or snow, perhaps more will be necessary. I think, however, that the reputation of the paint and the painter *oftentimes suffers* by using either a bad dryer or too much of it. *Bear in mind that the very same cause which dries up paint also tends to destroy it.*

CHEAP QUICK DRYING JAPAN.

Cheap and quick drying japan made with benzine and other equally poor and injurious materials is too much depended upon by painters; it is one of the prime causes of nearly all the trouble that comes from an unsatisfactory job of painting when pure lead is used. It curdles as soon as mixed with linseed oil and falls to the

 *The Phoenix brand of Pure White Lead is the most economical because it takes more oil in mixing.*

bottom of the paint bucket, carrying with it fine particles of lead, which gives the paint the appearance of being coarse and poorly ground.

One of those coarse particles, when broken and carefully examined, will be found to be very tough, and almost wholly japan dryer, which has formed a little ball or globule, and that the LEAD IS ONLY ON ITS SURFACE, and these little balls are what appear to be coarse lead. To prove what we say, take a quantity of this cheap japan dryer and linseed oil; mix them together and note the result. Where japan dryer is required, or desirable, use the best COACH MAKERS' JAPAN only.

When complaint is made of painting, the blame is generally attached to the lead, because the purity of the article with which the lead has been mixed, has never given the painter a moment thought. We can only succeed in producing the BEST RESULTS with the VERY BEST MATERIALS, therefore, avoid all cheap articles in painting, and especially CHEAP JAPAN DRYER.


The following article from the Oil, Paint and Drug Reporter, of Nov. 14, 1877, will, we think, justify us in all we have said about japan dryer.

"EFFECT OF CHEAP JAPANS AS DRYERS.

Cheap japans, used as dryers, are, in part, responsible for a large class of paint troubles which are described under the head of 'chipping,' 'cracking,' and 'becoming fatty.' Too many painters are led away by cheap japan (on account of its good drying qualities), that has but little binding and less elastic hardening properties; and color ground in it with a little oil (which it has no desire to mix with) is liable to curdle as soon as you put them together, and gets gritty or fatty. Thin it down with turpentine and let it stand over night, and it will look like liver in the cup; and as the turpentine leaves it, it gets spongy."

Right here it will be proper for us to say that the lead, IF PERFECTLY PURE, like our Phoenix Brand, CAN NEVER be the cause for bad work.

I use *raw oil altogether*, and use dryer according to circumstances, but many good men differ from me in this, using kettle-boiled oil. Having mixed your paint, cover it up safe from dust or dirt, and get ready for use. Before using the paint some thinner will have to be added. Turpentine is the best, and must be judiciously added according to the requirements of the job, *usually just before being applied*. The color for a large blank side of a house should be thinned, however, all at once. In regard to thinners, *the first coat should be oil*, and of this the job should get *all that it will take without running*. The next coat may have a little turpentine, but it serves no better purpose than to make the paint work easier. *Avoid* laying on the second and the third coat *too thick*, for, should this be done, the *paint will shrivel up on its face, or skin over*, as it is called, and will then be


 The Phoenix brand of Pure White Lead is ground in raw, unbleached linseed oil.

rough and have no *even gloss*. A little turps, therefore, helps to the extent of *saving the labor of brushing* out thick paint thin; it, however, will eventually fly off or evaporate, and hence serve *no permanent good* to the job. *Benzine* operates in the same way, but benzine has *acid* in its composition and must necessarily have a bad effect on paint by oxidizing it, and *so hastening its destruction*. *This will be manifested by the paint soon becoming chalky* and in this manner eventually washing off.

Benzine is too much used instead of spts. turpentine for thinning, because it is so much cheaper, being sold usually at about one-half to one-fourth the price of spts. turpentine. Its use is a great mistake, as it frequently contains more or less free sulphuric acid, which will certainly decompose the lead and oil, causing the lead to precipitate in what appears to be a coarse granular form, which can only be worked up into smooth lead with great difficulty. Not only have we this trouble to contend with, but it renders the painting liable to crack, blister and scale off, and then, as with most all other trouble with painting, the cause is charged to the lead alone.

My experience has satisfied me fully that paint might better *chalk off* than *peel off* or *flake off*, and for this reason I have discarded *oxide of zinc for outside use*. Oxide of zinc appears to me to partake of the nature of its base, as compared with lead, and to be harder and more brittle than metal. As a consequence, *it flakes off*, which is a "*thousand times*" the *worse fault a paint can have*. I have seen zinc flake off in strips a foot or more long; and this, too, where it did not seem to be damp.

To be sure, even good lead paint may flake off. This can *only* happen, however, *with lead*, when the wood or surface painted is *saturated with water or dampness*, or when it is in such a position that it becomes soaked with water after having been painted. However, under such circumstances, *zinc is much worse*. Contrary to zinc, if lead becomes chalky after from five to eight years' wear, it will chalk off gradually and equally all over, and can be repainted, and the work will be as good as ever. But, if the paint flakes off in spots or strips, it is ruined forever, without the expensive job of burning off is resorted to. In mixing paint get the best materials always, *the best lead and colors are the cheapest*. You can depend upon them for covering, without spending so much time in laying off to hide the brush marks. The

 *The Phoenix brand of Pure White Lead is Old-Fashioned, Old Dutch Process Lead.*

manufacturers who sell cheap articles make larger profits out of cheap goods than they do of pure articles.

DO NO PAINTING IN A HURRY.

The experience of some of the most careful observers has been that too much of the painting is done in a hurry, proper time not being allowed for one coat to dry or become hardened before another is applied, consequently, the work when finished does not give satisfaction. Ample time should be allowed for each successive coat to become well dried to secure the best work.

CHEAP WORK.

But, if your customer wants a cheap job, merely to sell a house and get it off his hands, or something of that kind, tell him frankly that you can furnish a cheaper paint, which may probably make the cost almost one-fourth less. Then allow me to tell you


HOW TO MAKE A CHEAP PAINT,

And I hope to be forgiven for this by my fellow-craftsmen. It has an appearance of debauching our trade, but I believe it to be *equal, if not superior* to a majority of *ready mixed paints*.

RECIPE:—Mix up a pot full of pure lead paint in the ordinary way, as above described, and pour it into a tub or large keg, then take about the same quantity of *Gilders' whiting* in another pot, and break it up pretty stiff and fine *in water*; pour the two together in the tub and stir the mass somewhat vigorously for awhile. The lead in oil and whiting in water will mix, and you will have *just double the quantity* of paint, which will be thicker than it was before, and all obtained for a very little additional expense. This material works well in warm weather, and is by no means so bad a paint as four-fifths of the mixed so-called paints are. It has *not*, however, the *covering capacity*, *nor will it do so good a job as pure lead paint*. It is, however, free from soda and from any of the other chemical substances generally relied upon to make the large amount of water contained in "mixed paints" mix with the small amount of oil entering into their composition.

INSIDE WORK.

In mixing *good wearing* paint for inside use, or for dark colors, use about the same quantity of materials that you

 Notice the Guarantee of Purity on each keg of the Phoenix brand of Pure White Lead.

would for outside work, including the oil. You might, perhaps, use a trifle more dryer and turps for delicate tints or white, as oil will turn the work more quickly yellow. For *light colors*, and to give the much admired

FLAT FINISH,


Discard oil on the last coat and use only turpentine. In the case of an *extra fine* job, even going so far as to *take out some of the oil* with which the lead is ground. This is done by breaking up the lead in turps rather thin, then by allowing the lead to settle over night, you can pour off the oil and turps, leaving the lead in such a state, which, if applied in that condition, would wash off like calcimine. To counterbalance this tendency and to *make it wear*, use as a binder, a *little very light copal varnish* (thinned; if necessary, with turps). Lead so treated, has to be worked *very quickly*. For walls or other work you can still use some little oil in the paint and have it flat, *provided* you add a little dissolved bees-wax to it. To make this useful article, *take a clean pot and put in a pound of bees-wax and dissolve it by heat. Take the melted wax off the fire and add one gallon of turps, stir well and set aside for future use.* You can flatten varnish, or hard oil finish either, by using a little of this dissolved wax. There is a finish called

"EGG SHELL GLOSS,"

Which is much admired. It is about *half way between a clear flat and a full gloss*. Such a finish wears better and is much easier to clean than if it were a clear flat one.

CHINA GLOSS OR FLORENTINE WHITE.

Put on a priming coat of pure white lead and oil; 2d coat, mix the lead, half and half, oil and turps; 3d coat, the best French zinc, mixed flat, turps only; 4th coat, a little zinc and clear damar varnish; 5th coat, less zinc and clear damar varnish. Sand-paper between each coat, and give plenty of time for each coat to dry. This kind of work should not be done if there is a prospect of the color being changed, for the reason that, if properly done and the room has light, and if it has ordinary wear, it will last almost forever. It is objectionable because it is a hard thing to paint over; the superimposed color being liable to crack badly or chip off.

 *An ounce of Gold is offered for every ounce of adulteration found in the Phœnix brand of Pure White Lead.*

CHIPPING OFF.


White lead paint becomes excessively *hard* after a few years (and zinc more so) so that even sand-paper will scarcely take hold of it. *If it be painted over in this state with a dark color, or is grained, a slight blow will break it off.* This is the very annoying fault called *chipping*, and it has probably caused more hard feeling against a painter, than any other operation in his line. He is blamed for putting on bad paint or varnish, whereas the fault lies in the fact that *in inside work time transforms paint into a species of glass, to which new paint only adheres as it would to glass, that is, merely on to its surface.*

Graining or colored work that is done upon the bare wood never acts this way. An indifferent paint or a poor varnish may indeed wear off quickly or become mealy, but it seldom chips off. White paint over dark paint or graining acts in the same way as dark paint over light.

In any case, with *old work*, where a radical change is made, the old paint, if it has been on long enough to get so hard that sandpaper will not take hold of it well, *ought to be either softened with some alkaline preparation, or taken off by burning* with a painters' furnace. This is a somewhat troublesome and expensive operation, but I believe the painter who guarantees against chipping short of this, will have reason to regret it, that is, if his word is good for a year or more. I have, however, seen work stand fairly well when painted over old and hard surfaces, if the old work be *passed over first with a moderately strong solution of soda or of ammonia and soda, thoroughly washed afterwards*, and so painted on. This is a much cheaper way, certainly, for the burning off business is expensive.

SPOTTING ON OUTSIDE WORK.

This mainly arises from the fact that weatherboarding and other wood work have places which are crossgrained, and hence more porous than others. These places soak up the oil unequally on the surface, and leave the pigment unprotected, subjected to the bleaching influences of the sun and the weather. This effect is often heightened by the employment of staining colors which are not permanent. As a rule, any pigment which changes very much upon the application of oil, is bad to use. For instance, there is a grey on

 *Phoenix Pure White Lead has no blue in it to make it look white. It can, for this reason, be used to mix delicate tints.*

the market which, in its normal or dry state, is quite light (almost white) but oil immediately turns it almost a black. If, from any cause, when this grey is used, the oil leaves the surface entirely, or leaves it unequally, the dark staining color becomes its normal light color again, and hence it will be badly spotted.

TO PAINT INSIDE WALLS.

The old-fashioned way to paint walls is to paint them over and over again until you get a proper and even surface. It may take from four to six coats; however, it is a good job when it is done, provided you give each of the several coats time enough to harden.


A newer way, resulting in a saving of both time and money, is to put on a coat of good oil paint right on the bare wall, and, over this, when dry, apply a coat of *glue size* just strong enough to stop the suction (for, if too strong, the paint applied over it will peel off, if the size should creep on the first coat, a little dissolved alum in the size will prevent it). This sizing coat, if properly done, will save, perhaps, two coats of paint. Finish the last coat as you desire. *An egg-shell gloss* (page 48) on the size, finished afterward with a full round coat of oil color, will give a glossy and a good wearing paint for *kitchen* or *halls*. Ordinarily, however, a coat of varnish with a little color mixed in it is, perhaps, much better for the last coat.

FOR CHAMBERS OR PARLORS,

however, a flat finish is much to be preferred; the glare of a full gloss bringing out all the defects, if there are any in the wall, which look badly and are difficult to cover up. All the best rooms in a house should, by general consent, be finished in flat colors without, certainly, a high gloss; if it is desired they should be flat,

THE LAST COAT SHOULD BE STIPPLED.

This stippling is the work of two men at least; the one with the stippling brush following immediately after the one who lays on the color. A fine job of wall stippling can hardly be done short of four or five coats on a bare wall.

 *The Phoenix brand of Pure White Lead is the standard for comparison.*

HARD WOOD FINISHING, FLOORS, Etc.

The following described method of filling wood was practiced long before any of the wood fillers now used were patented.


The proper requisite for finishing hard wood is, first a good filler, and the best filler yet found, is a good article of English China clay, or silicate of aluminum. It is light in color and weight, is transparent, and becomes very hard; will take any stain, and is impalpably fine, just as it comes from the barrel. It should be dry and sifted through a fine wire sieve, before using; it can be softened at first by adding a little turps.

TO THIN OUT THE FILLING FOR USE.

Mix, say, *one quart of turps, one quart of oil, and one pint of a good liquid dryer.* This should set in a short time after it has been put on, so that it can be scraped off clean. Use a calcimine scraper for the flat parts of the work, and a cotton rag for moldings, etc. By scraping off you save your filling and your rags, and leave your filling with a more even surface, the rags being liable to rub off too much filler, especially if it has not set sufficiently hard. In using rags, rub as much as possible across the grain. After scraping off the filling from the surface and wiping off the moldings and uneven parts, and after the filling has become somewhat hard, clean the face of the work off thoroughly, small sticks being used for the quirks and corners. In making your thinner as above, the point is to use turps enough to flat it, or set it quick enough for it to be worked. If it should set hard too quick, so that you can not clean it off easily, use more oil. This operation is designed to fill up the grain of the wood, and wiping off all else, or, in other words, to simply putty up the fine pores solid and even, and to stop the suction of the wood. In this operation be sure to destroy or spread out your oily rags, for many a house has been burnt up by the spontaneous combustion of these when stowed away in some dark corner.

THE RULE FOR STAINING THE FILLING

Is, to make your filling as near the natural color of the wood as possible, or just dark enough to show the grain to the best advantage. For *light woods*, such as oak or pine, use *Brandon yellow, yellow ochre, or raw Sienna*, toned, if too

 *The mixing of any shade is an art easily learned.*

raw, with the umbers, of even black. *Burnt umber* and *burnt Sienna* are good staining colors, according as they suit the wood.

Let the filling coat stand until hard, at least over night, then putty up wherever necessary with stained putty, *matched exactly to the wood*, having several tones of the color for that purpose. The work is now ready for your hard oil or varnish. A cheap and good job can be done in two coats over the filling, especially over the finer grained woods, such as maple, cherry and even black walnut. *Extra care* must be taken with *ash* or *oak* to fill it thoroughly.

Clean off your work properly before varnishing. Put on a smooth coat, and keep dust from it.


IF IMITATION OF RUBBED WORK

Is desired, after your hard oil or varnish coat is hard, put on a coat of *wax finish* made thus: *one quart of best hard oil finish*, *one quart of dissolved beeswax* (see page 48), and *one pint of turps*. Lay this on as quickly as possible, covering a door side all at once if possible; if this should be too flat use more hard oil and less turps.

IF A FINER JOB BE REQUIRED,

Put on from two to four coats of *best hard oil finish* or good cabinet rubbing varnish, *allowing each coat ample time to get hard*, for the harder your varnish is the better it will rub. then take some raw rubbing oil, and mix with it, perhaps, one-fourth of benzine, rub this on the work with pulverized pumice-stone; the *finer* this pumice is the *greater will be the gloss*. A *high gloss*, however, is generally not desired. For flat surfaces you can use a piece of No. 0 sand-paper, moisten the work and sandpaper with oil, then dip it into the pumice-stone, and rub lightly until you get the surface smooth. You should have pieces of woolen cloth or felt for the uneven surfaces. *Rub always the way of the grain*. For carved work or even moldings, you may use a stubby sash tool or small brush, working the pumice-stone and the oil together. After the work is rubbed smooth, clean off nicely with rags or waste. *Leave no greasiness or grit on the work*.

Rotten stone will give a *finer polish* than pumice-stone.

 *Fresco painters and decorators prefer Phoenix Pure White Lead. They can get pure tones by using it.*

HARD WOOD FLOORS.


People are beginning to realize that there is nothing equal to a hard wood floor, or a stained pine floor finished as hard wood. They are sweet, fresh and cleanly.

Hard wood floors are generally scraped and cleaned off nicely by the carpenter, and there is no trouble in making a good job of them. Mix the filling, and stain it as before described, perhaps, however, with more oil. If the cracks and joints are small, the filling goes a long way to stop them up while the filling is scraped off by the scraper. Usually two coats of varnish are enough, the last one being the *wax finish* before described (see page 52). This, however, makes a somewhat slippery floor, but it looks nice if put on well. Some, however, like more shine to it, in which case put on a heavier bodied, or more varnish. A varnish, however, should be used which is *guaranteed not to mar or scratch* by walking over it. Pine floors are not generally so nicely laid, but of course the smoother they are the better will be the work. Treat them, however, just as you would a hard wood floor, and stain any color you wish. This must be done *after the filling is on*. You can, of course, rub a hard wood floor down to a cabinet finish in oil and pumice; a stained job, however, is more difficult to do, and requires a heavier body of varnish.

In some respects a clear wax finish, without varnish, is better; but they are a great deal of trouble to keep polished. The polishing is done by using a hard brush and plenty of elbow grease every week. The method described above obviates this.

GRAINING.

It used to be considered that it is better to let new work stand grounded in for a year or more, and let it shrink all that it is going to do before graining. Riper experience now teaches us that graining stands much better on the whole when brought up and finished from the bare wood; it will certainly never chip off and make the unsightly appearance which is so mortifying alike to the artist and to the housekeeper. When done in the new manner the wood may shrink some in a year, more or less. It can then, however, be puttied up with colored putty, and revarnished; a process which ought to be gone through with anyway.


 In mixing colors, follow directions, and you can not go wrong.

After this it will be a permanent job. For *best work, do not put on too much paint for a ground coat.* Three thin coats, properly papered and smooth^{ly} laid on, are ample; *do not hurry it through at lightning speed,* for something will crack and break.

As to the ground color, a good general rule is to *take the lightest shade in the real wood you intend to imitate*; better a trifle lighter than darker. Some of the best effects are brought out in graining by glazing or shading, and this can not be done so well if the ground is too dark; better also make it a little brighter than the real wood. In the case of some rich woods, mahogany for instance, a ground of yellow or an orange will allow the grainer to bring out the best effects. Some grainers have preferences, and if the painter is wise he will consult the grainer as to his wish before he lays in the work.

It is by no means an easy task to write how to grain; perhaps I had better not attempt it. It is about as easy to learn to write a good English hand or to speak the German tongue without a living teacher, as to learn to grain under the like circumstances. It may truthfully be said that any one who can learn to write a good hand can learn to grain by an earnest application to it. He must get a few combs—steel and leather or rubber—an over-grainer, blender, etc. Study nature's work in the wood and practice, practice, and when he thinks he has got it, practice again. The admirable quality of self-esteem will be sure to suggest that his work is almost faultless, and the only thing that will convince him to the contrary is time. Let him preserve his first faultless piece of work, and look at it again in a few years and he will be ashamed of it. A good help for quick work is a set of Callow's graining tools, but a man can do better work without these or any other machine if he is a good grainer. Above all, do not try to beat nature, especially during the first three months of practice. A good job of plain combing, straight, clean and fine combed, the way of the grain, and *cut off sharp at the joints*, for oak, is much better taste than an attempt at knots, "angle worms," or fancy work. Even black walnut, properly grounded, stippled in distemper with Vandyke brown lightly, and glazed up to the color of the wood in burnt umber in oil, is far preferable to a good decorator than large and crooked grains and loud markings. Get a clear, soft and transparent color and fine grain, and it will look well, and generally accord with the furniture and wall decorations. An imitation of wood should be either first-class or not at all. Some think it is better not at all, claiming that it is an artistic fraud.

It is said that graining wears better than plain painting. The fact, however, is due mostly to the good varnish covering it.

 *The Phoenix brand of Pure White Lead preserves surfaces from decay.*

WHITE LEAD.

The base or body material of all paint is carbonate of lead, called, commercially, "white lead." It is made directly from pig lead (the best refined lead of commerce being used). A surface painted with white lead, therefore, receives a coating of this almost unchangeable metal. It is for this reason that a *pure lead paint will wear so much longer* than any other pigment.


There are many ways of making carbonate of lead, or white lead, as a chemical product, but there is only *one true* way for making it when it is to be used as a pigment; this way is called "*corroding it by the old Dutch process.*"

Millions of dollars have been spent attempting to find some *cheap and quick method* for doing by chemical and mechanical means, what nature slowly does unseen by means of her own forces. All such *cheap "quick process" methods have failed.* They have been able to make a *pure white lead*, but one with *characteristics which render it useless for a pigment or for use in the arts*, being *crystalline* in its nature, and *possessing little or no body.*

To make white lead by the old Dutch process, requires the outlay of a large sum of money for a plant and for machinery. It takes from one hundred to one hundred and twenty days for the pig lead to be in process of manufacture before it can be shipped out as white lead. The processes lead goes through during its transformation are many and varied, requiring constant, careful and skillful watching all the time; besides repeated manipulation by machinery made especially for the purpose.

There are many reputable brands of "pure white lead" on the market to-day, differing, however, in quality one with the other, their purity being unquestioned. The *quality of a white lead determines its value as a pigment*, and its quality depends on the experience, care and skillful attention given to it at all times during its manufacture.

It should be understood that absolute purity is not always a guarantee of good quality. For illustration: wheat grown in the same field may be ground at two different mills, yielding, in one case, the most excellent flour, while in the other, it may be so inferior as to be hardly fit for use, and yet both are absolutely PURE. The same rule will apply in the manufacture of white lead. If the very best metallic lead is used, and unskilled labor and insufficient

 *Use the Phoenix brand of Pure White Lead once, and you will use no other.*

or poor machinery employed, the lead but partially corroded, improperly washed, not carefully floated or thoroughly dried, the result after grinding it with oil can not be satisfactory; although, as in the case of the mill making the poor flour, purity can not be denied.

A pure white lead in oil, in order to be a paint, satisfactory in every respect, must possess certain characteristics:

1. It must be opaque and amorphous, else it will be more or less transparent, requiring coat after coat to cover a given surface.


2. It must be finely ground; so fine that when rubbed with the finger on a piece of glass or smooth slate with an excess of oil, no gritty or hard substances will be perceptible. If it is not fine it will not make, when mixed, so much paint, pound for pound, as can be made with an article which possesses this characteristic; nor will it do such fine or even work under the brush.

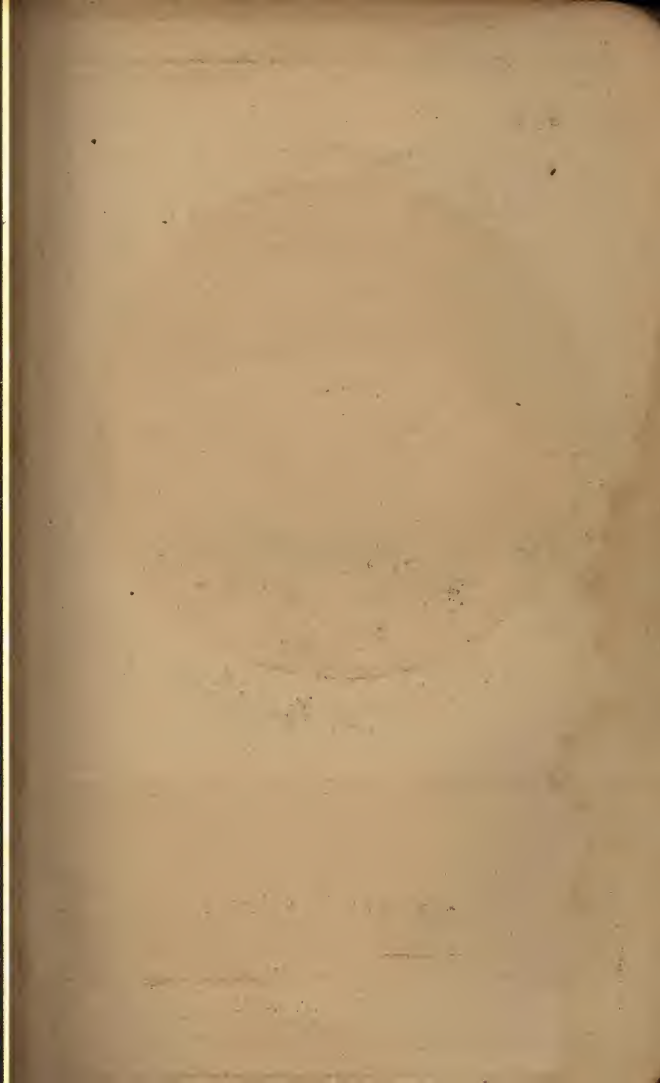
3. It should be tenacious and tough, falling in shreds from the paddle when dipped from the keg.

This is one of the most valuable characteristics a lead can have, as it causes it to adhere better to the surface painted, and enables the workman to "brush out" the paint to the farthest extent possible, thus covering more square feet of surface with a given quantity of material. Very few leads possess this characteristic in any degree; most of them do not have it at all, being just the opposite, like lard, slipping short off from the paddle, falling in a dab, and staying wherever put. A lead having this latter characteristic works very free under the brush, requires a larger amount of material to cover a given surface, takes less oil, and does not make such an even surface on account of the workman's ability to "plaster it on" without "brushing out."

4. It should be well combined with the oil; should be of a firm, uniform consistency throughout the keg, and should break up easily when mixed with a small quantity of oil so as to be easily dipped from the keg.

5. A lead should be white. *Not the blue white obtained by mixing blue in it during its manufacture, or the white obtained by the use of certain bleaching chemicals and acids, either by action on the lead or by treating the oil in which it is ground.* With a lead made white by means of the former, it is almost impossible to mix the more delicate tints; the blue continually

 **The Phoenix brand of Pure White Lead will not chip off.**





GUARANTEE

This package is warranted to contain nothing but PURE WHITE LEAD, ground in PURE LINSEED OIL, and we will pay ONE OUNCE of GOLD for every ounce of adulteration that it may be found to contain.

The Eckstein White Lead Co.,

J. Eckstein Pres't

OF PURITY.

throwing the tint off. Whitened by the latter means *causes deterioration of the paint in a variety of forms* after short exposure.


NOTE.—Great degree of whiteness in a lead is not such an all-important requisite or advantage. It may be, in fact, a positive disadvantage, when obtained at the sacrifice of other more valuable qualities. This is so on account of a peculiar property possessed by carbonate of lead, viz: that of bleaching out to an absolute white when exposed to the light for a few days. This being the case, any well made lead (provided no bleaching acids or chemicals have been used in its manufacture) will, after a few days exposure, bleach out to an absolute unshaded white.

The Eckstein White Lead Co. claim that their **Phoenix brand of Pure White Lead** meets all these requirements in the highest degree possible. An experience of *fifty years*, coupled with careful and personal attention to every smallest detail of its manufacture, is the reason why the brand manufactured by them is held in such high esteem all over the country; *is, in fact, the standard for comparison.* Their new works, erected in 1883, contain nothing but the newest and most perfect machinery, all of which was devised by themselves; much of it being patented, can be used by no other manufacturer.

Each package of their Phoenix brand bears on its head a black label, the fac-simile of which is on the opposite page, and on its side a red label guaranteeing the purity of the package. Further, the package has stamped or lettered on it the date (day, month and year) on which it was ground, also the number of the miller who ground it. Large packages (200 lbs. to 600 lbs.), in addition, are numbered consecutively. At the end of each day sample kegs of the lead ground are set aside for reference to, in case of necessity. By this system they are enabled to watch and keep track of every package made, and by referring to records kept for the purpose, tell the history of the manufacture of every identical package, from the first to the last. By none of the other manufacturers is this system in use, and patrons of the Phoenix brand can rest assured that the lead purchased from the Eckstein Co. will always be uniform in quality.

PIGMENTS.

Zinc. French zinc is the best and whitest. It is more transparent than lead, its covering power being three, as compared to lead, which is five. It is said to be non-

 *The Phoenix brand of Pure White Lead will not chalk when properly mixed.*

poisonous, and to retain its whiteness under some circumstances better than lead. Its use is principally for white enameling or china glass, but this is seldom called for now. For outside work it is apt to chip or flake off.

Venetian Red. This color is of every-day use in a paint-shop. It is very permanent, a good dryer. It should be ground fine.


Indian Red—Tuscan Red. English, Indian and Tuscan red are probably the strongest bodied, most opaque colors in general use. They are fine in their grain. Can be used even without grinding. They dry well with a little assistance from dryers. They, however, become darker from exposure.

Vermillion is a fugitive color. Does best as a body color on a ground of Venetian red. Is used principally for lining and tinting, sometimes as a body color; but in oil, for a fine shade, needs glazing with carmine. In thin mixtures it works badly, as it settles quickly from its weight. The new analine vermillions, although they are very pretty colors, are, perhaps, more fugitive than genuine vermilion. These may be easily detected by wetting the end of your finger and rubbing a little on it, when the flesh will be dyed.

Red Minerals. There are a large number of fire-proof mineral paints in the market; they are mostly used for tin roofs; they are mostly fair dryers, are permanent, and should always have a place in a paint-shop. Princes' and Lyons' minerals and Brandon red are good. Brandon red is a good substitute for Italian Sienna; it is a strong-bodied color, but in thin color semi-transparent. These are all fine grained colors, and for common work can be used without grinding. The best American burnt Sienna is frequently used as a stain for cherry. It is also a useful color in calcimining, giving a fair terra-cotta tint, and is not effected by old lime in the plaster.

Yellow Ochre is also an every-day color. It is permanent, but naturally a slow drier. In oil combinations it needs to be finely ground.

Brandon Yellow is a useful color, semi-transparent, does better in water than in oil. It is used in oil more as a cheap stain for pine. In water it makes a very useful tint with whiting.

 *A White Lead may be chemically pure, and be valueless as a pigment.*

Chrome Yellow is indispensable to a painter. Should be ground well; is fairly permanent; is also useful in tinting. For this purpose, however, it is well to be aware of lime, by passing over the wall a thin coat of shellac, hard oil, or damar.

Dutch Pink. Dutch pink is a useful yellow in calcimining.

Umber—Raw and Burnt. Burnt umber is the more useful of the two. Turkey umber, finely ground, is indispensable for graining. It, however, is somewhat fugitive also in combination with white. With yellow ochre, Brandon yellow, American burnt Sienna and lamp black, you may dispense with the umbers as stainers, and get any umber shade you wish.

Vandyke Brown is used in graining and staining almost exclusively. It is a miserable dryer.


Blue. A good article of ultramarine blue will serve most of the purposes for which blue is needed. It, however, is somewhat purplish. For a good sky-blue, *cobalt* is better.

Green. All the color makers have chosen greens which they call by their own distinctive names. Some are a little better than others; but all pure goods are better than emerald green or Paris green for covering. This last is very brilliant, but is a poisonous pigment and most tantalizingly transparent and without body. For tinting, chrome greens must be worked over shellac, hard oil, or damar, as lime will turn them red.

Ultramarine green is a pretty blue green. The only green which shows green by artificial light, and hence called gas-light green. Ultramarine green is used only in distemper.

Black. Lamp-black is also one of our most useful pigments. It is a very slow dryer, but is the most permanent pigment known; is almost unchangeable and indestructible. It needs no grinding, but must be strained through a fine strainer. Its opacity is great, but is surpassed in this quality by the new carbon black. Lamp black is a blue-black, and with white gives a bluish-grey. Drop-black is a jet black, which in oil or japan is used sparingly in house work; but this in powder or Swedish black is used in water colors for tinting, and works all right when ground.

Lake. Rose lake makes a fair body color in water for tint-

 *White Lead made by chemical means has no body, and will not wear.*

ing coves in cornices, etc., but is very fugitive when exposed to light. Madder lake, Chateauc lake, Munich lake and carmine are superior in richness and brilliancy, and somewhat in permanency; but when good they are expensive. The color trade would help painters if they could introduce a brilliant crimson at a reasonable price, permanent and capable of forming fine pink and rose tints with white. In oil painting the fine lakes are only used to glaze over vermillion or other reds, and are generally protected by varnish.


VARNISHING.

Buy your varnish of a good reliable maker, even if it does cost a trifle more. Tell him the purpose for which you require the article, and you will generally be satisfied.

For outside varnishing the trade has pretty generally discarded varnish, the best of it will comparatively soon perish. *A thin coat of oil and turps with a little dryer, rubbed off with a rag, and this done a little oftener, perhaps, than you would varnish, keeps outside work in good shape and ready at any time for any changes in color or style, without being tormented with cracking and blistering.* A good reliable varnish for inside work will not soon be displaced. It must be put on over all graining, and hard wood owes most of its beauty and usefulness to varnish; it brings out the grain, is bright, and easily kept clean.

The most of varnishes require to be worked well and quick, and are better done in a warm and dry room; dampness in the air causes a disagreeable film. The under coats should be thoroughly dry.

Polishing varnishes *should be hard before rubbing.* For a high gloss, use a flowing varnish made especially for that purpose. A good varnish properly put on will cover a multitude of sins underneath, but will manifest very rough work. *If a flat varnish be desired, mix with your varnish bees-wax and turps while all are warm.* A painted wall liable to be soiled, as a kitchen wall, is improved by a coat of varnish, and painted wood-work liable to hard usage, is also better for a coat of varnish. In these cases, however, the color of the varnish should be very light, and, perhaps, stained with a little of the color without oil.

 Every package of Phoenix brand of Pure White Lead is guaranteed to give satisfaction.

If it be necessary to *thin out varnish*, warm it, if possible; if turpentine be necessary, put that in warm too, but do not warm either upon a red-hot stove if you value your shop, your customer's house, or your own good looks.

These are necessary factors in doing a good job of varnishing: a hard and smooth ground, light, heat and cleanliness, good varnish presupposed.

As a rule, the *less oil* there is in the ground work, the better will be the job of varnishing, at least, *the less liable to crack or blister.*

In many houses there is a constant shrinking and swelling of wood, and probably a large amount of the cracking of varnish is due to this cause. A furnace in a house will shrink all the wood-work, and the summer weather will swell it again; now, if the varnish be hard and rigid it must crack if the wood swells.

CHOOSING COLORS.


A number of works are published with the object of informing the public how to color houses just right, and I confess that I get confused at the multitude of good counsel. I shall not attempt to add to this confusion, but be content with having done what I could, in the previous pages, to elucidate the principles which underlie a choice, and which must be applied according to circumstances. A few general principles only.

Cultivated people seem to have outgrown combinations of primitive colors, as well as all loud or startling effects. But once in a while an odd genius will break through the prevailing verdict of society, as has the English artist, Whistler, who glories in having his house decorated in bright yellow.

But few men or women have his taste, indeed, "there is no accounting for taste."

Get *en rapport* with the architect of the house, if possible, and *aid in bringing out his idea* with colors. If it is a *plain, substantial* house, paint it with *good substantial looking colors*, having respect also to its surroundings.

A Gothic, Swiss, or houses of that character, allow a greater display of taste and stronger effects, while the Queen Anne style gives an opportunity for quainter and stronger effects still.

 Use dark shades on the lower or recessed portions of a house.

If you should choose the color from some other house, you need not be surprised if your house looks very different from the sample, due to difference in style, aspect and surroundings.

To aid painters and others in selecting, I give samples of new and approved colors, hues and tints, and how to make them. Some of these may not be considered very pretty, but it may be set down as a truism that *there are no ugly colors if rightly placed, the art is in so combining them as to bring out their beauty.* (These colors found in back.)


CALCIMINING OR TINTING IN DISTEMPER.

A good job of calcimining depends very largely upon having the wall properly prepared. *All old calcimine should be washed off clean, and should there be lime wash on before, it should be scraped off, or neutralized.* Lime seems to absorb and retain the smoke-stains, and so will discolor the work. *Strong glue size will often cause the calcimine to peel off.* The best preparation for a bad wall is to get it as smooth as possible, and then to pass over it a *thin coat of shellac, hard oil finish, or damar varnish.* Kill bad stains with a solution of *hot alum*, shellac, varnish, or by pasting a piece of white paper over them.

Provide the best gilders' whiting or Paris white, and good, strong, light-colored glue, free from hog stock, say in the proportion of one pound of glue to twenty or twenty-five pounds of whiting.

Set the glue in soak some hours before you need it and cook it without burning. Mix your whiting with a little water. Break it well up and quite stiff, put in what coloring matter you have decided on, mix it thoroughly, dry out a little on a piece of white paper, if not just the shade, make it so; put in your glue, which, if your whiting be of the right consistency, will make your calcimine about right to strain. After straining, see that you have put in enough glue to bind it, by trying it again with this object. *If there is not enough glue it will rub off when it is dry; if there is too much it will flake off when it gets thoroughly dry.* Choose between the two extremes, and have it so bound on, that, if necessary, you can go over it again. Make one coat do, if possible. *One coat work, if properly put on, is smoother and not so liable to peel off as more coats.*

In putting on calcimine *do not lay it off all one way as you would paint*; the idea is to cover every spot as soon as possible, working it every way to get it level, smooth, and without brush marks. *Calcimine works better if cold and jellied.* It is very necessary, while working it, to keep the edges wet all along the


 Use lighter shades on the projecting portions or "high lights" of a house.

line, if part of it is allowed to dry or sink in, bad and rough work is the result. Hence, the general necessity for two men to work together, to keep the edges wet, and to properly and smoothly finish the work as they go. Men accustomed to this work become quite skillful and clean about it, but the best of them had better cover up with drop cloths, carpets or other goods which it is necessary to leave in the room; it is best to take them all out, if possible. Before putting on your sizing or your color, see that all cracks or holes are stopped up with plaster of Paris, and also that these are dry, as wet plaster will cause a discoloration, or rather, will always remain the color it is while wet, while the dry walls will dry out quite light in comparison with the wet spots. Remember, also, that you can not do a good job unless the suction be stopped before you put on the color. This is sometimes done by a glue size to which some soap dissolved in water has been added, and perhaps a little alum. Nothing is better, however, than a thin coat of hard oil finish or damar varnish, but these must be thoroughly hard first.

Sometimes a very hot or limy wall is improved by a coat of strong vinegar. If you do not shellac or varnish any other places, do so on cracks or holes stopped up, and on any place where the enamel of the plaster is taken off by sand-paper or otherwise.

PAINTING BRICK WALLS.

A newly laid brick wall contains within itself a large amount of moisture, and, if painted in this condition, especially just before winter sets in, the paint will retain this water, and a cold snap will freeze it and help to crumble the brick, and moreover, newly laid mortar still retains considerable of the caustic property of the lime, which will eat up or destroy the paint very quickly. If, then, there be sufficient reasons for making a good appearance at the start, better put on a coat of cement wash the color of the brick, made (if this be red) principally of water, cement, Venetian red, and a little lime or lime-water and salt. This will make it look all right for a year or so, it will not prevent the evaporation of the water, and will allow the caustic lime to act upon the sand of the mortar and harden it. When the wall is properly seasoned (if it has holes or cracks, point these up with Portland cement and sand, using no lime),

 The Superiority of the Phœnix brand of Pure White Lead is testified to from every section of the country.

cut off the lumps and rub off the surface with a brick. It is now ready for painting. If red brick is desired, give the wall two coats of good oil paint; the first may be a good iron mineral paint, the second of best English Venetian red, ground in oil, and the third of flat brick red, if it be desired flat, which is certainly the best for appearance. But clear oil paint with a gloss, may last a little longer.

Flat brick red is now made by most manufacturers; buy the best or make it yourself in this way: Take, for a light brick red, about equal parts in bulk, of English Venetian red, ground in oil, and dry Brandon yellow, then add about a quart of good coach japan or hard oil finish to, say, two gallons of thick paint to bind the dry color, finally thin out with turpentine entirely. Try a little of this first, it should dry flat, and not rub off. If it is too glossy, put in more color and more turps; if it rubs off put in more japan.


If a darker color be desired, put in Indian red in place of the yellow. This paint must be put on quickly and with care, just as flatting is done for inside work. *On no account can it be worked after it has set.* When leaving off from any cause, cut in the edges cleanly to the line of the brick, both on the sides and the ends of the brick. The color, also, should be uniform as a coat over the whole front.

If the brick are to be penciled, lay off the lines uniform and the ends plumb, and if not in full practice, buy a few trenches and practice pencilling awhile before you go on the job. The lines should be straight, even and fine. If the wall be desired of any other color, prepare it in the same way. Let the first coat be good oil paint, and plenty of it; after that use less oil, more pigment and perhaps more turps; the third coat ought to bear out pretty even, but the second usually looks worse than the first.

PAINTING IRON.

[From the *Painters' Magazine and Coach Painter.*]


Whilst the necessity of painting iron-work arises from its liability, when exposed to the atmosphere, to oxydize, the great advance in artistic iron-work, whether for railings, porticoes, balustrades, finials, terminals, crestings, etc., has led to a demand for skill and taste in so coloring the patterns as to aid the effects of the designs. Instead of monotonous, uniform hues, we have polychromatic decoration

 The Government, in several departments, requires that the *Phoenix brand of Pure White Lead* be used.

such as emphasizes the principal features, and marks the distinguishing constructive forms. The effect of taste in this particular has been particularly well illustrated in many of the extremely handsome balustrades passing from story to story in full sight, in the capacious walls of some of our prominent business buildings of recent erection, aided by the aerial effect of lofty, continuous stairways lighted from above.

By marking the ornamentally molded centers of a succession of the same designs in panel or rail form with gilding or enamel paints, the eye, in a casual glance, is better able to follow the radiating portions, touched up here and there by brilliant primary and other hues, constructional points, such as rivets and bands, being similarly emphasized by distinctive tints. The time has gone by when dark, sombre coats, ordinarily black, were thought to be alone appropriate to iron, as if otherwise it might be mistaken for something really different from what it was. Still, there is too much adherence on the part of architects, especially in grand ornamental gates to buildings, to black, which contrasts badly with stone, brick and terra cotta. Thus, much elaborate beauty in work imitative of wrought iron is lost. So with massive decorative standards for lamps. In Italy, France, and even in England, colors are put to splendid account in decorative iron-work. The most notable instance of painting decorative iron-work on a large scale, is the Crystal Palace, at Sydenham, near London, where red, yellow and blue in appropriate shades are used for the coloring of pillars, arches, and their spans, of girders and the lofty arched roof, and with superb results. The insertion of engravures in relief, these being of iron, between stories having iron bow windows, as seen in some of our apartment houses, afford fine opportunities for color effects, if only in supplying a different ground to the raised forms, but this is generally neglected for the sake of a monotonous uniformity.

Experiments conducted by the Dutch State Railroad on the behavior of different paints for iron work, have shown that red lead best resists the action of the atmosphere. It was discovered, too, that the coat holds better on iron plates cleaned by pickling, than when the plates have been scraped or brushed. The trial sheets were pickled with hy-

 *The Phoenix brand of Pure White Lead wears especially well on exposed surfaces.*

drochloric acid, washed with warm water, dried and oiled while still warm.


To prepare cast-iron for japanning it is necessary to make the surface smooth, and to this end, the best course is to fill the apertures with putty, with which iron filings or cast-iron borings have been mixed, and boiled linseed oil or a little japan varnish. The putty in this case should be as hard as possible, and on drying be smoothed with sand-paper.

CAR PAINTING.

[From an address delivered by Mr. R. McKeon, published in "The National Car-BUILDER."]

A first-class day railway-coach, on any of our main roads, costs, when complete, about \$6,000. To protect this work, the painter expends from \$300 to \$600. This latter figure will make a first-class job. The car has been completed in the wood shop, and is turned over to the painter, who is responsible for the finish. He is expected to smooth over all rough places or defects in the wood, which requires both patience and skill to make the work look well. Twelve weeks should be the time allowed to paint a car, and it can not be done in any less time, to make a good job, that will be a credit to the painter and all other parties interested in the construction and finish of the car. Too much painting is done in a hurry; proper time is not given the work to dry or become thoroughly hardened before it is run out of the shop, and consequently it does not always give the satisfaction it should; nor can it be expected that hurried work will be so lasting or durable as that which has the necessary time given to finish it.


The priming coat of paint on a car is of as much importance as any succeeding one, and, perhaps, *more*. I have seen good work ruined in the priming by little or no attention being given by the painter to the mixing and applying of the first coat. The foundation is the support, and on that rests your success or failure. The priming should be made of the proper material, mixed with care from *good lead* and *good oil*, and not picked up from old paints which have been standing mixed, and must necessarily be fat and gummy, for such are unfit for use on a good job, and will have a decided tendency to spoil the whole work. Special

 The Eckstein White Lead Co's "Coach and Car" brand is always one year old before it is shipped.

care should be exercised, both in mixing and applying the priming, and it should be put on very light, so that it may penetrate well into the wood. Too much oil is worse than not enough. *Good ground lead* is by far the best material for the under coats on a car, and *although I have tried other materials for priming, yet I have failed to find any thing equal to the lead.* Two coats should be given to the car before it is puttied, as it is best to fill well with paint the nail-holes and plugs, as well as defects in the wood, so that moisture may not secure a lodgment, which otherwise will cause putty to swell, although sometimes unseasoned lumber will swell the putty, and as it shrinks, the nail remains stationary, and, of course, the putty must give way.

In mixing putty, which may be a small matter with some, take care to so prepare it that it will dry perfectly hard in eighteen hours. Use ground lead and japan, stiffening up with dry lead, and whatever coloring you may require in it to match your priming coats. The next coats, after the work is well puttied, should be made to dry flat and hard. Two coats should be applied, and for all ordinary jobs or cheap work, sand-papering is all that is necessary for each coat; but when a good surface is required, I would recommend one coat to be put on heavy enough to fill the grain, and before being set, scrape with a steel scraper. The plain surface is all that requires coating and scraping with the heavy mixture; for this coat, which we call "filling," I use one-half ground lead and any good mineral which experience has shown can be relied on. This scraping of the panel-work will fill the wood equal to two coats of rough stuff, and saves a great amount of labor over the old process, when so much rubbing with lump pumice-stone was done. Sand-paper when the filling is thoroughly hard, and apply another coat of paint of ordinary thickness, when, after another light sand-papering, you have a good surface for your color.

Rough coating on cars has gone almost out of use, and I believe that but few shops are now using it to any extent. My experience is that paint has less tendency to crack where rough stuff is left off. I do not claim that the "filling" was the principal cause of the cracking, if it was properly mixed, but I believe the water used in rubbing down a car with the lump pumice-stone injures the paint, as it will

 A smooth, well-filled surface is obtained when the Eckstein "Coach and Car" brand of lead is used.


penetrate in some places, more particularly around the moldings and plugs.

The car being ready for the finishing color, this should be mixed with the same proportions of dryer as the previous coat, or just sufficient to have it dry in about the same time. A very great error with many car-painters is using a large portion of oil in the under coats, and then but little, if any, in the finishing coats; this has a decided tendency to crack, the under coats being more elastic. I always aim to have color dry in about the same time, after I have done my priming; by this plan, I secure what all painters should labor to accomplish—namely, little liability to crack. Work will of course crack sometimes, after being out a few months, or when it has repeated coatings of varnish; and using a quick rubbing varnish on work will cause it to give way in fine checks quicker than any thing else. *Many of the varnishes we use are the cause of the paint cracking*, and no painter has been wholly exempt from this trouble.

The most common cause of cracking is *poor japan*, which is the worst enemy that the car-painter has to contend with; the greater part of the japan that we get is too elastic, and will dry with a tack, and the “japan gold-size” we have has generally the same fault, although the English “gold-size” is generally of good quality, but its high price is an objection to its use. A little more care in the manufacture of japans would give us a better dryer, and few would object to the additional cost. Japan that I have frequently had I found *to curdle in the paint*; it would *not mix* with it, but would gather in small *gummy particles on the top*. Work painted with such material can not do otherwise *than crack and scale*, and the remedy lies only in getting a good pure article of *turpentine japan*.


In regard to using ground lead, car-painters differ, as some prefer to grind their own in the shop. I use the manufactured lead, and my reasons for doing so are that it is generally finer than any shop can grind it with present facilities, and it has age after grinding, which improves its quality. You can also get a purer lead and with more body than you can by grinding in the shop, which is a fact that I think most painters must admit; I have tested it very fully, and am convinced on this point.

Permit me to make a few suggestions here in regard to the

 *The best Coach makers require The Eckstein White Lead Co's "Coach and Car" brand of lead.*

mixing of paint, which may not fully agree with others' views. There is just as much paint that cracks by putting it on too flat as by using too much oil. I have seen some painters mix their finishing color so that it was impossible to get over a panel of ordinary size before it was set under the brush, and consequently the color would rough up. Color should be mixed so that it will not flat down for some time after leaving it, and then you have got some substance that will not absorb the varnish as fast as it is applied to the surface. This quick drying of color is not always caused by want of oil in it, but because there is too much japan, and a less quantity of the latter will do better work, and make a smoother finish. Give your color forty-eight hours to dry between coats; I always give that time, unless it is a hurried job, and we have very few such jobs in our shop, as experience has fully demonstrated that it is poor economy to hurry work out of the shop before it is properly finished.


In car-painting, both raw and boiled oils are used, and good work may be done with either, but I would recommend oil that is but slightly boiled in preference to either the raw or the boiled. After it is boiled, if it is done in the shop, let it stand twenty-four hours to settle, then strain off carefully; this takes out all the impurities and fatty matter from the oil, and it will dry much better, nor will it have that tack after drying that you find with common boiled oil. Use the proper quantity of dryer in mixing your paint, and a good, reliable job will be the result. In car-painting, I would never recommend the use of prepared colors which are ground in oil, as nine-tenths of such colors are ground in a very inferior oil, and they may have been put up for a great length of time, in which case they become fatty, and will invariably crack. These canned colors do not improve with age, as lead and varnish do. Finishing colors should all be ground in the shop, unless special arrangements can be made with manufacturers to prepare them, and the color should be fresh, not over six or eight days old after being mixed and open to the air. Enough may be prepared at a time to complete the coating on a job, but when color stands over a week, it is not fit to use on first-class work, as it becomes lifeless, and has lost that free working which we find in fresh mixed colors; such color may, however, be used upon a cheap class of work, or on

 *The Eckstein White Lead Co.'s "Coach and Car" lead has received everywhere the highest endorsements.*

trucks, steps, etc., so that nothing need be wasted in the shop. Three coats of varnish over the color are necessary on a first-class coach. The first coat should be a hard drying varnish put on the flat color; the quick rubbing that some use I would not recommend, but one that will dry in five days (in good drying weather) sufficiently hard to rub, is the best for durability. After striping and ornamenting the car, and when thoroughly washed, give a coat of medium drying varnish; let this stand eight days; then rub lightly with curled hair or fine pumice-stone, and apply the finishing coat, which is "wearing body;" this will dry hard in about ten days, after which the car may be run out of the shop. It should then be washed with cold water and a soft brush, and it is then ready for the road. In varnishing, many will apply the varnish as heavy as they can possibly make it lie, when, as a consequence, it flows over and runs or sags down in ridges, and of course does not harden properly; this also leaves a substance for the weather to act on. It is better to get just enough on at a coat to make a good even coating which will flow out smooth, and this will dry hard, and will certainly wear better than the coat that is piled on heavy.

Varnishing, we claim, can be overdone, some painters' opinions to the contrary. We have heard of those who put two and a half gallons on the body of a fifty-foot car at one application, and we have also listened to the declaration made by a member of the craft, that he put two gallons on the body of a locomotive-tank. Such things are, perhaps, possible, and may have been done, but if so, we know that the work never stood as well as it would if done with one-half the quantity to a coat. In varnishing a car, care should be taken to have the surface clean; water never injures paint where it is used for washing, and a proper attention to cleanliness in this respect, and in the care of brushes used for varnishing, will insure you a good-looking job.

Perhaps your shop facilities for doing work are none of the best, but do the best you can with what you have; select, if possible, a still, dry day for varnishing, especially for the finishing coat. Keep your shop at an even temperature; avoid cold draughts on the car from doors and windows; wet the floor only just sufficient to lay the dust, for if too wet the dampness arising will have a tendency to


 *The Eckstein White Lead Co.'s "Coach and Car" lead is ground almost as stiff as putty.*

destroy the lustre of your varnish. Of course, we can not always do varnishing to our perfect satisfaction, especially where there are twenty-five or thirty men at work in an open shop, and six or eight cars are being painted, when more or less dirt and dust are sure to get on the work.

A suggestion might here be made to railroad managers, which is, that no paint-shop is complete where the entire process of painting and finishing a car has to be done in one open shop. A paint-shop should be made to shut off in sections by sliding-doors, one part of the shop being used exclusively for striping and varnishing. I know from experience that nine-tenths of the railroad paint-shops are deficient in this particular, and still we are expected to turn out a clean job, no matter what difficulties we are compelled to labor under. Many further hints might be given in regard to this matter of shop facilities and conveniences, but as it is not here my object to argue the point, I leave it with this brief mention.

In regard to the care of a car after it has left the shop, I think more attention should be given to this than is done on many roads. The car should not be allowed to run until it is past remedy, and the dirt and smoke become imbedded in the varnish, actually forming a part of the coating, so that when you undertake to clean the car you must use soda or soap strong enough to cut the varnish before you succeed in removing the dirt. Cars should be washed well with a brush and water at the end of every trip: this only will obviate the difficulty, and these repeated washings will harden the varnish as well as increase its lustre. We know that in washing a car, where soap is required to remove the dirt and smoke, it is almost impossible to get the soap washed off clean, and if it is not quite impossible, the hot sun and rain will act on the varnish and very soon destroy it. Cars should be taken in and revarnished at least once in twelve months; and if done once in *eight* months, this is better for them, and they will require only one coat; but where they run a year, they will generally need two coats. Those varnished during the hot months will not stand as well as if done at any other time. Painting done in extreme cold weather, or in a cold shop, is more liable to crack than if done in warm weather.

Paint dried in the shop, where there is a draught of dry

 *The Eckstein White Lead Co.'s "Coach and Car" lead is worth the extra price charged for it.*

air passing through it, will stand better than that dried by artificial heat; and you will find, by giving it your attention, that work which has failed to stand, and that cracked or scaled, was invariably painted in the winter season or in damp, wet weather. I have paid some attention to this matter, and know the result.

SUNDRY MATTERS.

BLACKBOARDS.

To make a blackboard, for white crayons, take shellac varnish, use this as you would oil, and finely powdered drop black for a pigment; mix well and apply quickly and without laps, several coats; thin out, if necessary, with alcohol. This of itself makes a blackboard, but some recommend a little finely powdered pumice-stone mixed in with the black. When it is thoroughly hard, rub down lightly until smooth enough with lump pumice-stone and water; if rubbed too thin in spots, coat it again and rub.

GOLD PAINT.


Bronzing for decoration is generally employed now as paint is used. Get the bronze powder (French gold leaf powder is the best). This is the pigment for a fluid to mix it: take one-fourth of extra light hard oil finish and three-fourths of turps, mix, and use as required. Do not mix much at once, as it dries quickly.

CARE OF BRUSHES.

Keep varnish brushes in oil, washing them out before using in benzine, and rubbing this out dry on an old board.

Keep paint brushes in water hardly deep enough to cover the bristles, and in a trough of this form: two slanting sides and a bottom lined with tin. In a shop for ten men this may be about 10 feet long, 4 in. deep, and 12 in. across. In winter use a strong brine, as it will not freeze. Brushes kept in it should be washed out before using.



 For Coach and Car work, use *The Eckstein White Lead Co.'s "Coach and Car" brand.*

STAINS.

[From the Painters' Magazine and Coach Painter.]

DARKENING MAHOGANY.—To darken mahogany with a deep tint, and yet keep plenty of color, a small amount of chromate of potash may be melted in a quart of water, and applied with a piece of woollen cloth.

WALNUT STAIN.—Genuine powdered Vandyke brown is mixed with a small amount of pearlash in cold water, by heating it until it becomes a paste, and a quart of boiling water gradually poured on and stirred. Also apply with a piece of woollen cloth.

FINE BROWN STAIN.—This may be obtained by diluting the walnut stain with three times its volume of water.

BLACK STAIN.—An extract of log-wood, obtained by boiling it three hours in water, is to be applied hot, making a red stain. Coat this over with vinegar that has stood three hours in a jar, with rusty nails at bottom, and you have your black.

ROSEWOOD.—Grain with above vinegar.


BROWN OAK.—The walnut stain as described, diluted to the shade required, will serve for brown oak.

BIRCH.—A good imitation of birch is obtained by a solution of chromate of potash.

RED OIL.—Red Oil for mahogany is got by simmering linseed oil into which alkanet root has been thrown. The oil must be closely watched.

OAK OVERGRAINING.—Vandyke brown, ground in water, is placed on a plate, with a basin of stale beer beside it; the pencil overgrainer is dipped in the beer, and then the tips of hairs into the water-color. The tips are drawn lightly from top to bottom of the panel, in straight lines, over the combings. The mottler is then brought into requisition for broader veins and for knots, and whilst the color is still wet, the badger softener. To prevent "cissing," go over all the grain with a sponge dipped in a thin paste of whiting or Fuller's earth.

PINE STAINING.—Many excellent stains of pine may be obtained by using the ordinary graining colors, Vandyke brown, raw and burnt sienna, ultramarine blue, etc., applied

 *Very little of the Boiled Oil now on the market is pure.*


with a brush, without previous preparation, and then wiped off with a cloth—a method that brings out clearly the grain or marks of the wood, which, in pitch pine, now being extensively used for fittings, are often extremely beautiful. A better method for general work, French polish being ordinarily too expensive, is, where dark oak or mahogany stains are not wanted, light varnishes, of which two coats are to be applied. The glue size with which the work is first coated, in order to fill up the pores of the wood, should not be too thick, as in that case it is liable to crack.

TO TEST THE PURITY OF WHITE LEAD.

The following is an INFALLIBLE and SIMPLE commercial test of the purity of White Lead.

Take a piece of firm, close-grained charcoal, and near one end of it scoop out a cavity about half an inch in diameter and a quarter of an inch in depth. Place in the cavity a sample of the lead to be tested, about the size of a small pea, and apply to it continuously, the *blue* or *hottest* part of the flame of the blow-pipe; if the sample be strictly pure, it will, in a very short time, say in two minutes, be reduced to metallic lead, leaving no residue; but if it be adulterated, even to the extent of ten per cent. only, with oxide of zinc, sulphate of baryta, whiting or any other carbonate of lime (which substances are now the only adulterations used,) or if it be composed entirely of these materials, as is sometimes the case with cheap lead, it can not be reduced, but will remain on the charcoal an infusible mass.

Dry White Lead (carbonate of lead) is composed of metallic lead, oxygen and carbonic acid, and when ground with linseed oil, forms the White Lead of commerce. When it is subjected to the above treatment, the oil is first burned off, and then at a certain degree of heat, the oxygen and carbonic acid are set free, leaving only the metallic lead from which it was manufactured. If, however, there be present in the sample, any of the above-mentioned adulterations, *they* can not, of course, be reduced to metallic lead, and can not be reduced by any heat of the blow-pipe flame, to their own metallic bases; and, being immediately incorporated and ground with the carbonate of lead, they prevent *it* from being reduced.

 *Avoid the use of Boiled Oil as much as possible.*

It is well, after blowing upon the sample, say, half a minute, by which time the oil will be burned off, to loosen the sample from the charcoal with a knife-blade or spatula, in order that the flame may pass under as well as over and against it. With proper care the lead will run into one button, instead of scattering over the charcoal, and this the reason why the cavity above mentioned is necessary. A common star candle or a lard oil lamp furnishes the best flame for use of the blow-pipe; a coal oil lamp should not be used.

By the above test, after a little practice, so small an adulteration as one or two per cent. can be detected; it is, however, only a test of the *purity* or *impurity* of a lead, and if found adulterated, the degree or percentage of adulteration can not be well ascertained by it.

Jewelers usually have all the necessary apparatus for making the test, and any one of them can readily make it by observing the above directions, and from them can be obtained a blow-pipe at small cost.


If you have no open package of the lead to be tested, a sample can most easily be obtained by boring into the side or top of a keg with a gimlet, and with it taking out the required quantity; care should be used to free it entirely from the borings or particles of wood, and it should not be larger than the size mentioned; a larger quantity can be reduced, but, of course, more time will be required, and the experiment can not be so neatly performed.

Although the above description is necessarily somewhat lengthy, this test is really very simple, and any one can very soon learn to make it with ease and skill.

FELIX McARDLE, *Analytical Chemist,*
St. Louis, Mo.

CLEANING PAINTED WALLS.

To clean walls well, two men are usually required, one to follow the other; the danger of streaking or spotting is by this means largely avoided. A stretch of from three to four feet wide is as much as should be begun at a time. This should be *wetted first with clear water*, using a sponge for the purpose; afterwards follow with a *suds (made by dissolving white soap in warm water)*, using to apply it a calcimine

 Walls painted with the "Phoenix brand" of Pure White Lead clean beautifully year after year.

brush, scrubbing slightly. After the dirt has been softened by this means, scrub with a preparation made as follows:

Castile soap, brown, shaved thin	1 lb.
Whiting	2 lbs.
Water	$\frac{1}{2}$ gal.

Boil the soap and water together and then stir in the whiting. When cold, dip the brush into mixture and scrub.

Finally *sponge off thoroughly with perfectly clear water* and wipe down with a wet chamois skin.

Avoid using so much water or suds as to cause it to run down and streak or splatter any uncleaned portion.

Be careful to scrub lightly, *no harder than is absolutely necessary to remove the dirt.*

On the final washing-off see that the water is *perfectly clean*, renewing often for the purpose.

Begin a stretch at the bottom and work upwards.


— NOTES. —

ROUGH STIPPLE FOR COMBING.

"Rough stipple" is made by mixing equal portions of each, *White Lead, Plaster Paris (New York best) and Zinc White, with oil and turpentine (half and half)* and then adding enough Japan dryer to make the mixture adhere on a wall without running or sagging. This stuff should be applied with a brush to a surface in *as thick a consistency as possible*; that is, as thick as it can be worked with a brush; if thicker is desired use a trowel. Immediately after having been applied, this material will take the impression of any form desired, the same as wax, or it can be "combed" into straight or wavy lines, scrolls, etc., which, when harmoniously colored, gives effects very pleasing and decorative.

STIPPLING (see page 50).

Paint is stippled *immediately after it has been applied*, using for the purpose a brush made expressly for the work, called a stippling brush. This brush is about four inches wide by

 The "*Phoenix brand*" of Pure White Lead, being very tenacious, is especially well adapted for combing.


eight long, and having bristles from three to five inches in length.

The man with the stippling brush follows the one doing the painting and *strikes the fresh covered surface all over with the full face of the brush*, thereby giving to it (the paint) a rough appearance, like pebbled leather. This stippling should be done evenly and carefully, *care being taken that every portion of the surface is struck*. To do good work the stippling brush must be kept clean. It should be washed out in benzine at least twice while doing a room, besides being given an additional washout in warm water and soap when the job is finished. It should be hung up to dry.

TO MIX PAINT (page 44). In breaking up old and stiff packages begin the operation with the addition of *but little oil at first*.

Old lead is better than that which has been freshly ground. It takes longer to break it up, but the extra quality of the paint obtained pays for the extra time spent in mixing it.



 Being tough, the "Phœnix brand" of Pure White Lead stipples well.

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KEY.



USE THE PUREST AND BEST COLORS.


- | | |
|--------------------------------|---------------------------------------|
| A. —Phoenix White Lead. | K. —Lamp Black. |
| B. —Lemon Chrome. | L. —Burnt Umber. |
| C. —Yellow Ochre. | M. —Ultramarine Blue. |
| D. —Orange Chrome. | N. —Cobalt. |
| E. —Burnt Sienna. | O. —Emerald Green,
(Paris). |
| F. —Vermillion. | P. —Tuscan Red. |
| G. —Venetian Red. | Q. —Carmine. |
| H. —Golden Ochre. | S. —Raw Sienna. |
| I. —Raw Umber. | |
| J. —Green. | |

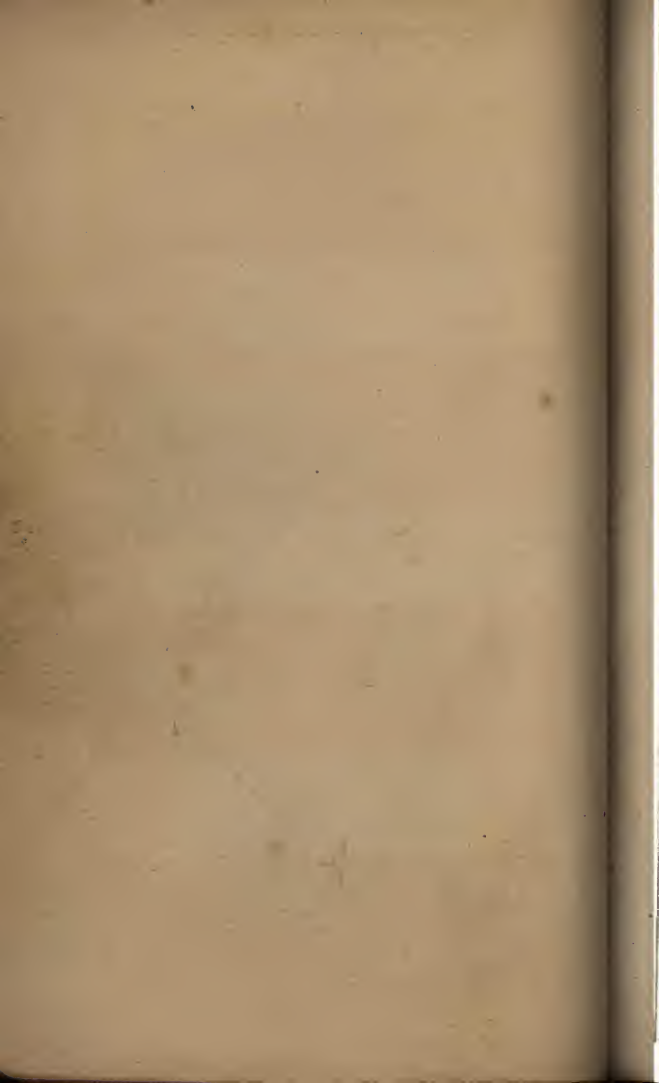


EXAMPLE.

No. 7 is a Cream Color. The Base is marked A, which is Phoenix White Lead. The next important element is C, which is Yellow Ochre. The next is F, which is Vermillion.

NOTE.—A good article of Venetian Red will often take the place of Vermillion, and for outside work, for several reasons, it is better, and in combination with a good Yellow it will often answer in place of Orange Chrome. And so Brandon Yellow, Brandon Red, Lamp Black and White will produce all the Umber tones.

 The base of all the following colors is the "PHŒNIX BRAND" of Pure White Lead.



Shrimp Pink

A. F. E.



Buttercup

A. B.



French Grey

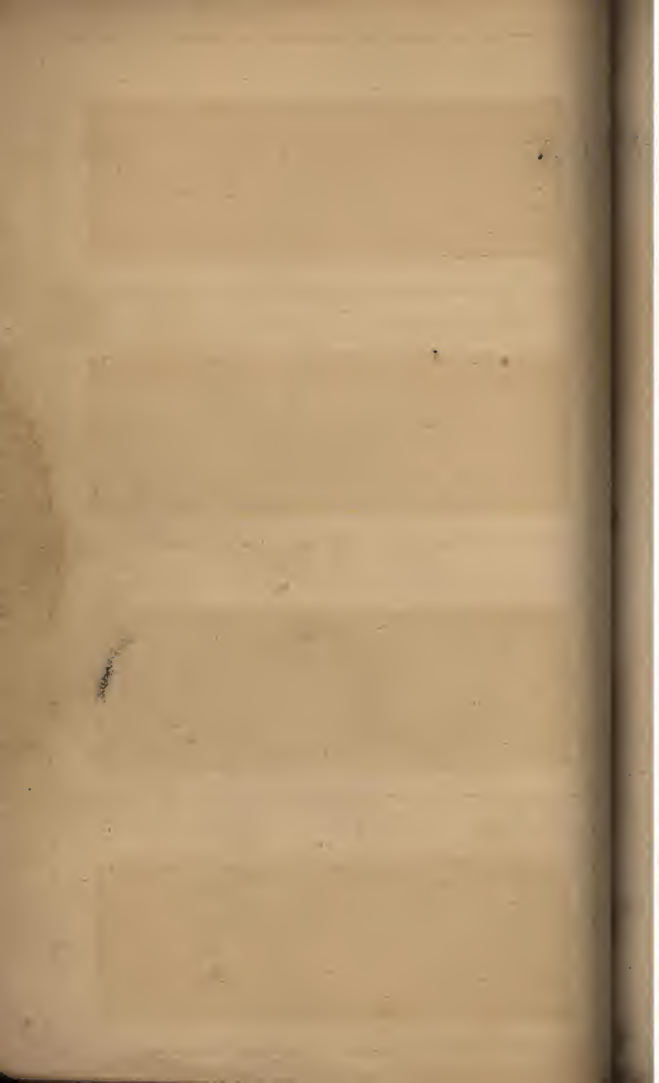
A. F. M. K.



Light Old Gold

A. H. J.





*Spruce**C. A. G.*

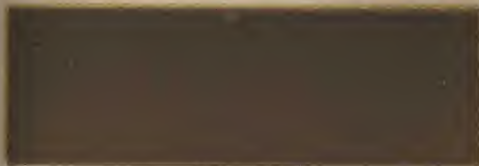
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*Peacock Blue**N. O. A.*

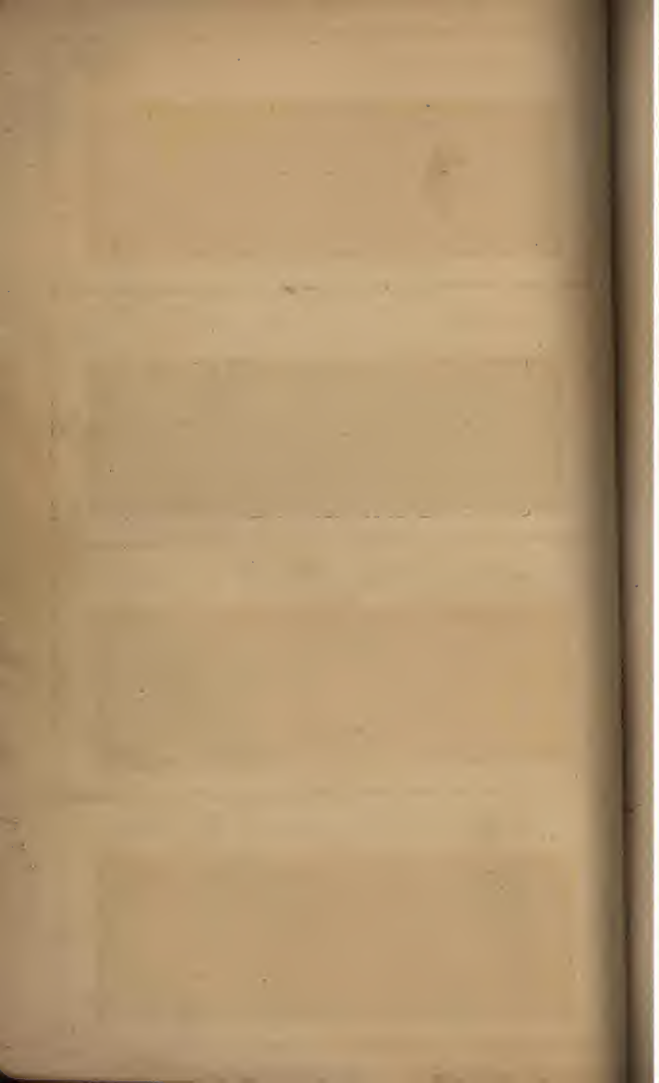
6

*Cream**A. C. F.*

7

*Grey**A. F. M. K. C.*

8



*Terra Cotta**A. E. K.*

9

*Citrine**A. D. J.*

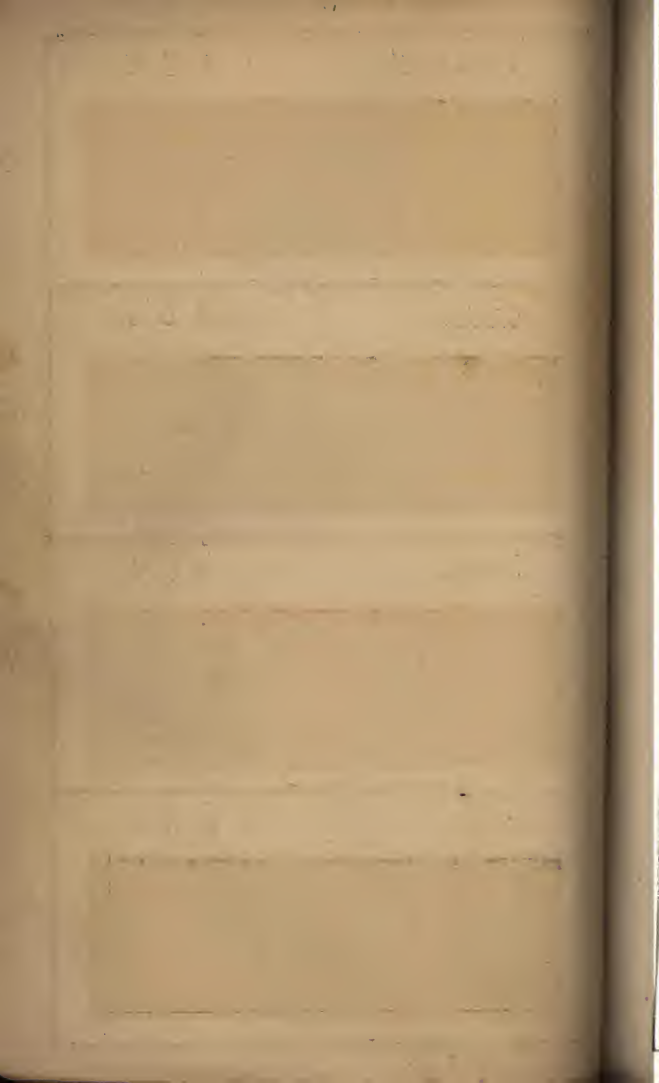
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*Salmon**A. G. E.*

11

*Myrtle**J. M. K. A.*

12



*Old Gold**H. A. E. J.*

13

*Lavender**A. M. F. K.*

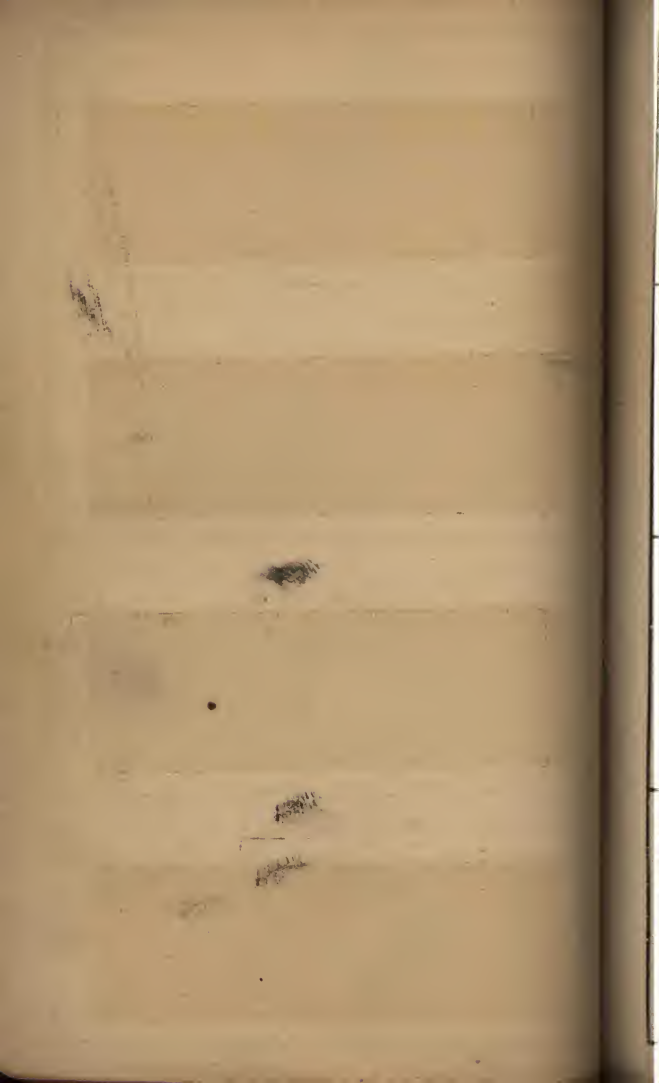
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*Citrine**A. D. J.*

15

*Grey**A. C. K. F.*

16



*Russet**A. F. D. M.*

17

*Slate**A. F. M. J.*

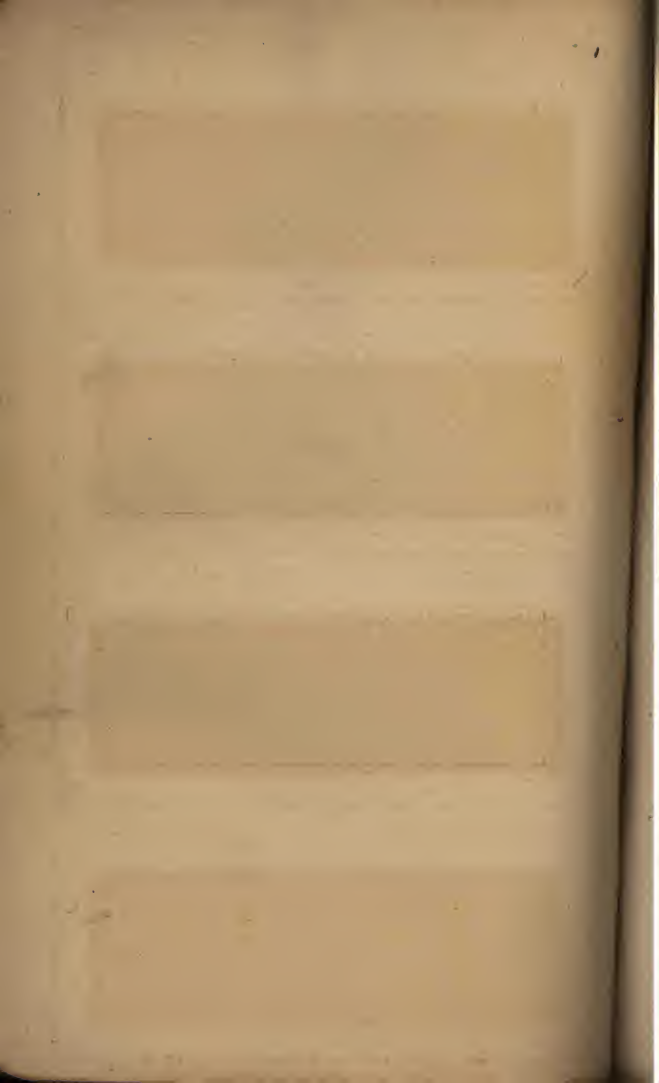
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*Fawn**A. C. E. K.*

19

*Light Citrine**A. D. J.*

20



*Straw**A. C.*

21

*Dove**A. G. L.*

22

*Tally Ho**A. C. G. K. J.*

23

*Myrtle**A. J. M. K.*

24



*Fawn**A. C. E. K.*

25

*Lemon**A. B.*

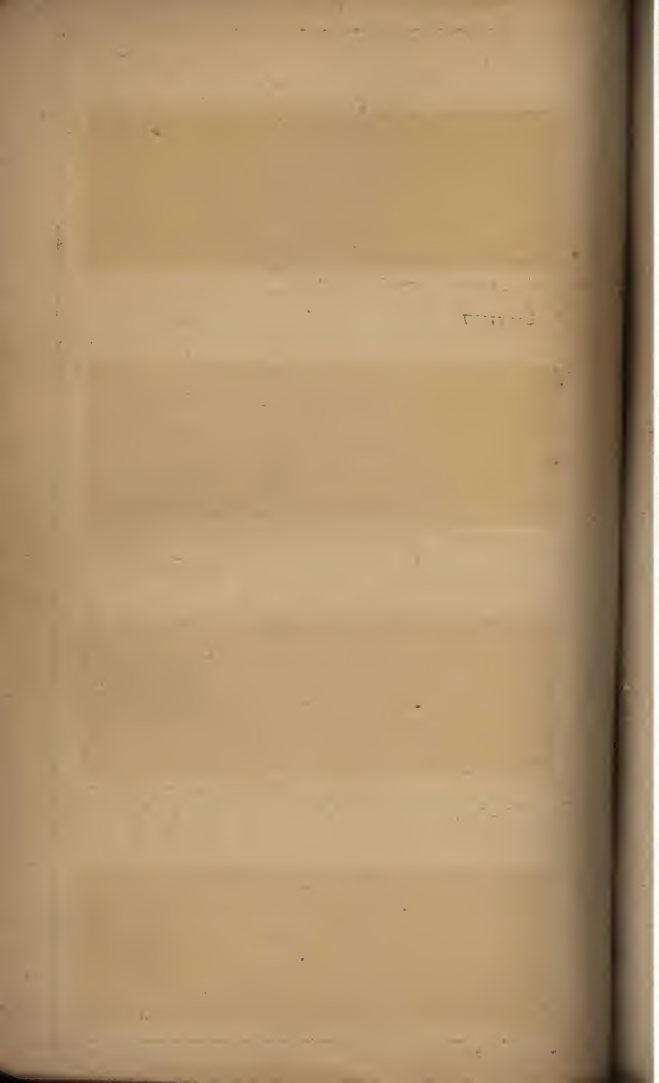
26

*Opera-pink**A. F. M.*

27

*Citrine**A. J. D.*

28



*Light Slate**A. F. M. J.*

29

*Mastic**A. C. G. K.*

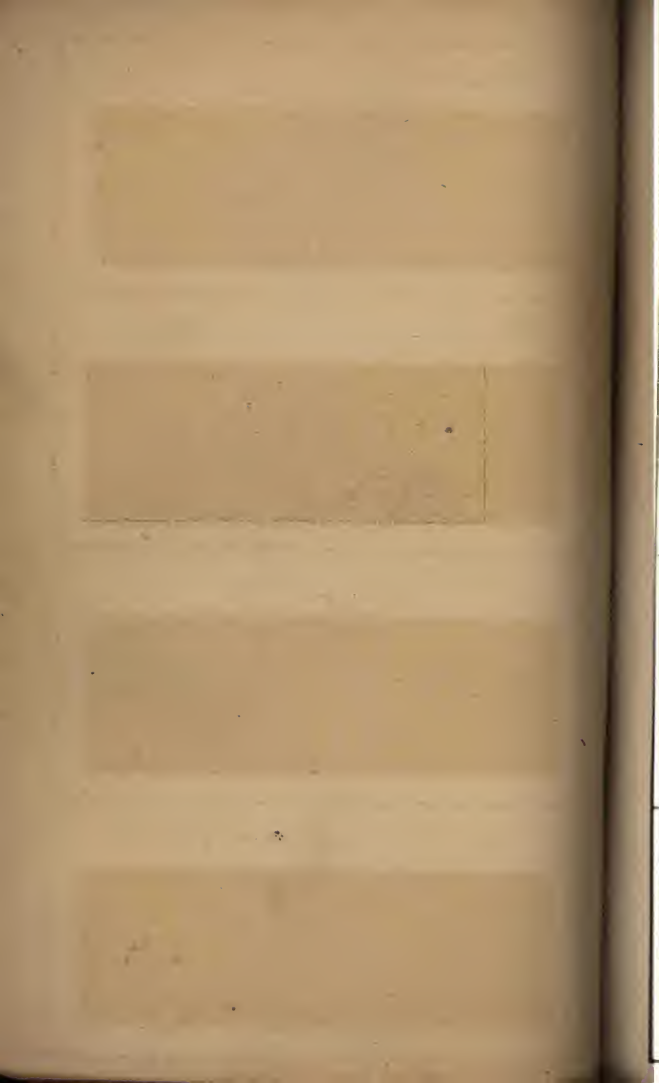
30

*Lavender**A. F. M. K.*

31

*Light Russet**A. D. G. K.*

32



*Turquoise Blue**A. N. O.*

33

*Mauve**A. G. C. K.*

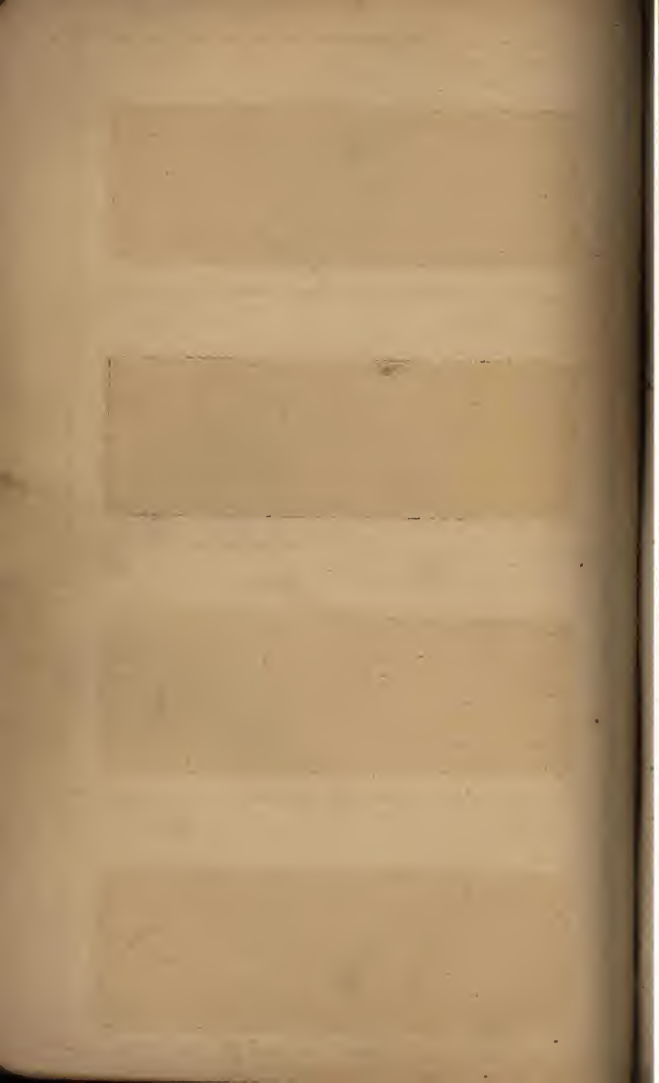
34

*Light Old Gold**A. H. J.*

35

*Slate drab**A. F. M. J.*

36



*Tan**C. E. L. A.*

37

*Sky Blue**A. N.*

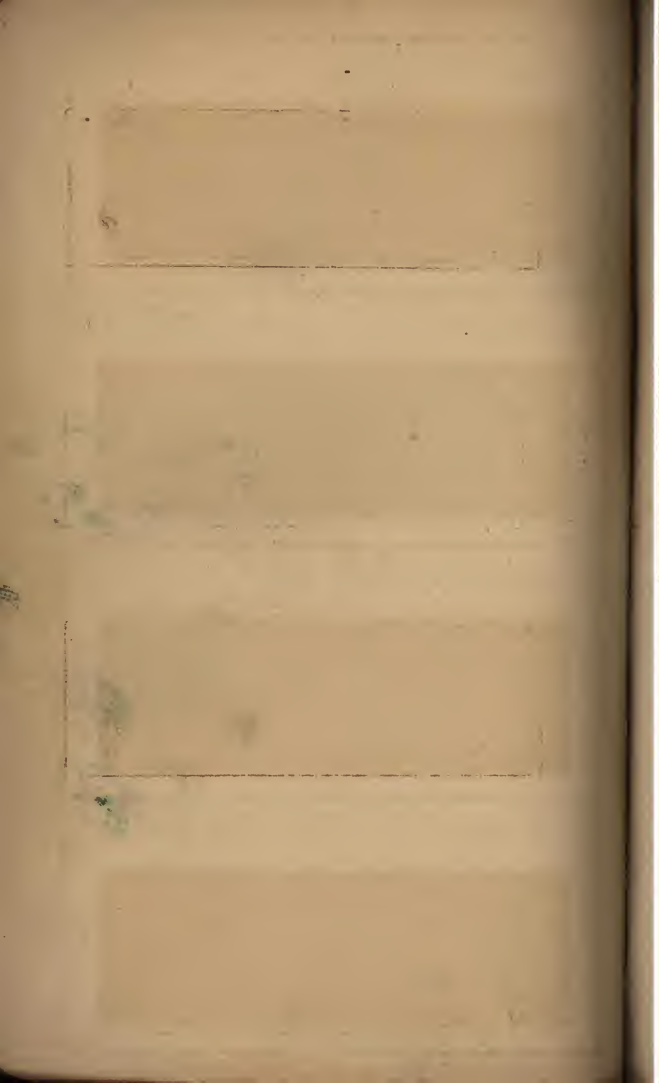
38

*Terra Cotta**A. E. K.*

39

*Lilac**A. M. F.*

40



*Drab**A. G. M.*

41

*Dull Green**A. J. M. K.*

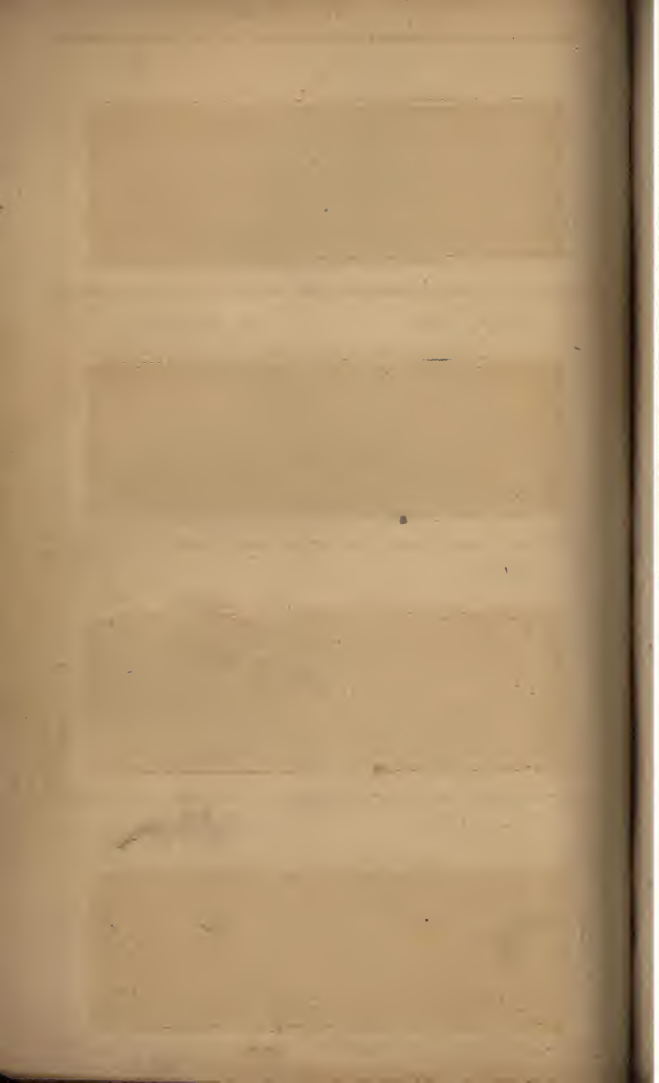
42

*Salmon**A. G. E.*

43

*Pure Grey**A. F. M. D. K.*

44



Citrine

A .D. J.



45

Shell Pink

A. F. E.



46

Slate

A. G. M. J.



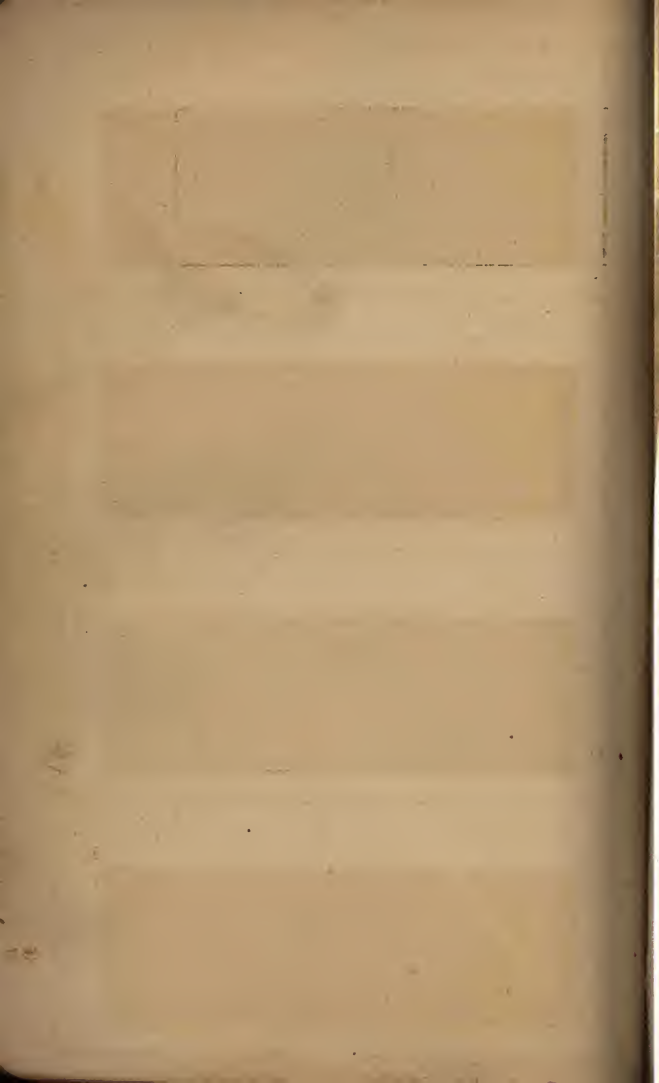
47

Primrose

A. B.



48



*Russian Grey**A. F. M. K.*

49

*Buff**A. C. F.*

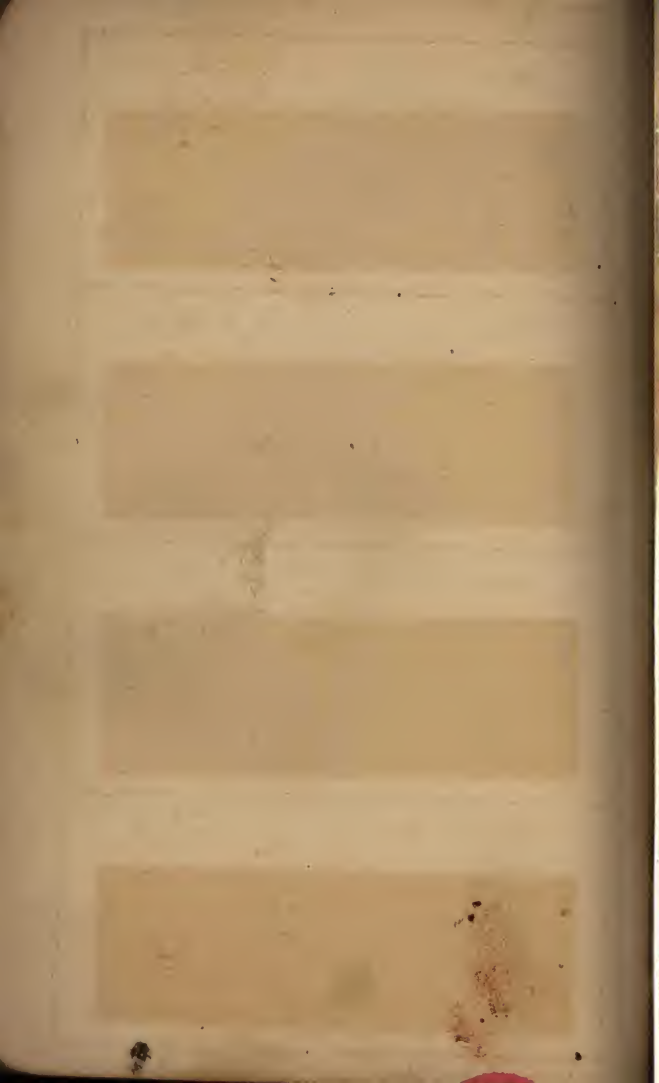
50

*Olive**A. D. K.*

51

*Pink**A. F.*

52



*Light Tan**A. C. E. L.*

53

*Pearl Grey**A. F. M. K.*

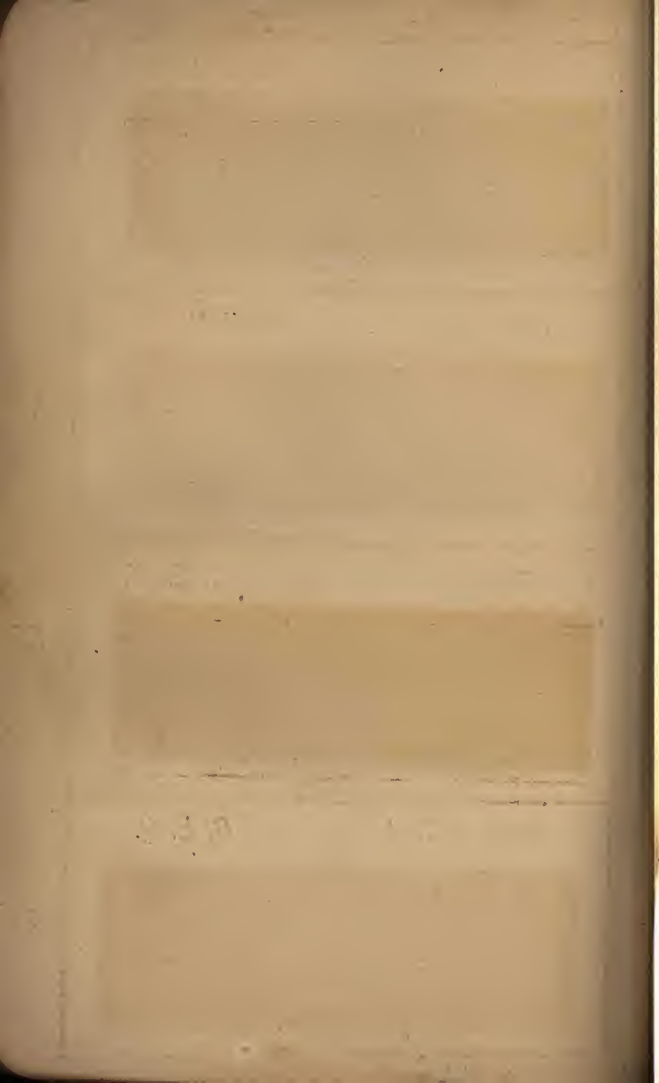
54

*Ecrú**A. C. E. K.*

55

*Pompian Red**G. E. Q.*

56

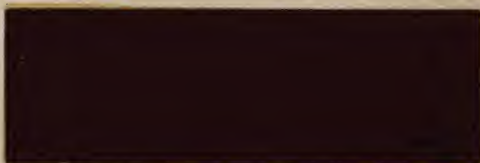


*Olive**C. J. L. A.*

57

*Ecrú**A. F. M. D.*

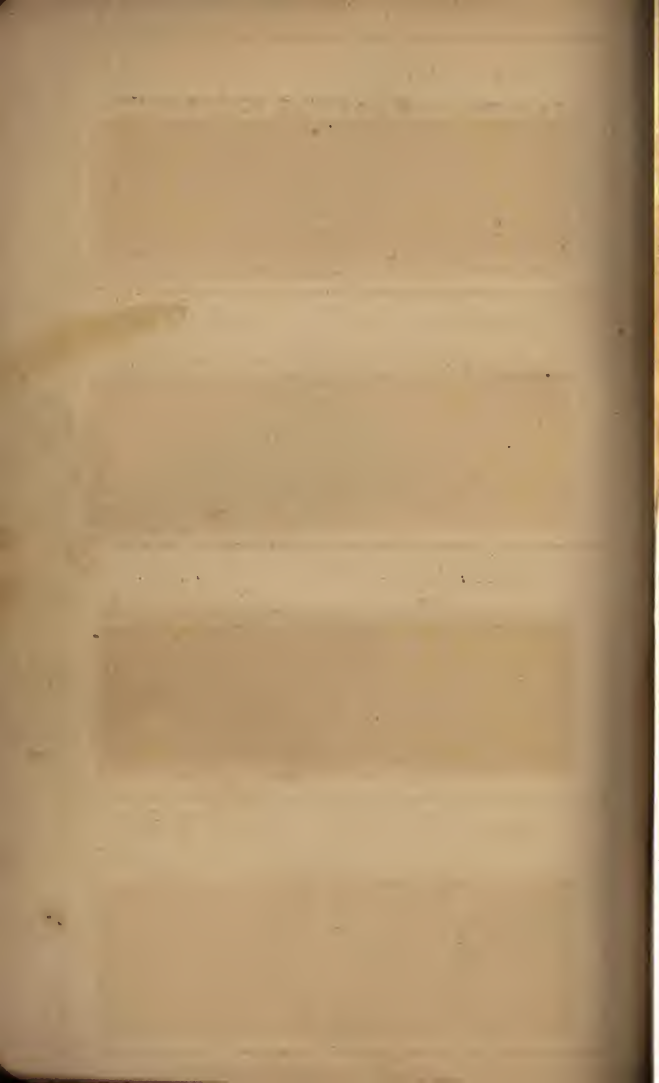
58

*Maroon**P. M.*

59

*Olive**A. C. K. J.*

60



*Brown Stone**A. E. C. K.*

61

*London Smoke**A. C. K. M.*

62

*Bismarck**E. L. D. A.*

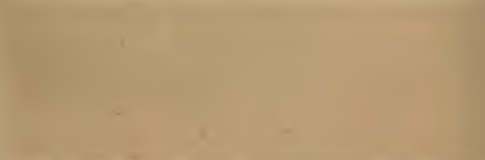
63

*Grey**A. G. M. D.*

64



Handwritten text, likely a signature or date, located below the top section.



*Coral Pink**F. D. A.*

65

*Wine**P. K. M.*

66

*Olive**A. C. K. J.*

67

*Scarlet**F. A.*

68



*Citrine**D. J. P. A.*

69

*Purple Brown**P. C. K. E. A.*

70

*Mauve**A. G. C. K.*

71

*Pompeian Red**G.*

72



*Smoke Drab**C. K. M. L.*

73

*Maroon**P. M. L.*

74

*Amber Brown**A. E. D. L. K.*

75

*Yellow Bronze**A. D. J.*

76



*Amber Brown**E. D. L. K. A.*

77

*Slate**A. M. G. K.*

78

*Brown Stone**A. C. E. K.*

79

*Crimson**F. Q. A.*

80

THE ... OF ...

...

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...

*Bismarck**E. L. D. A.*

8

*Light Emerald Green**O. A.*

82

*Light Brown Stone**G. C. P. K. A.*

83

*Hay**A. D. J. P.*

84



*Antique Bronze**L. K. J. E.*

83

*Gazello**P. G. A. K.*

86

*Apple Green**A. J. D.*

87

*Mauve Brown**P. K. A.*

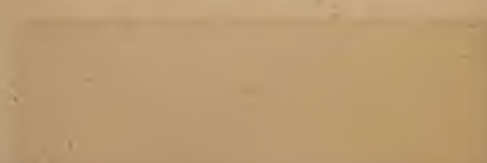
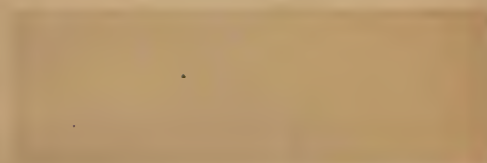
88



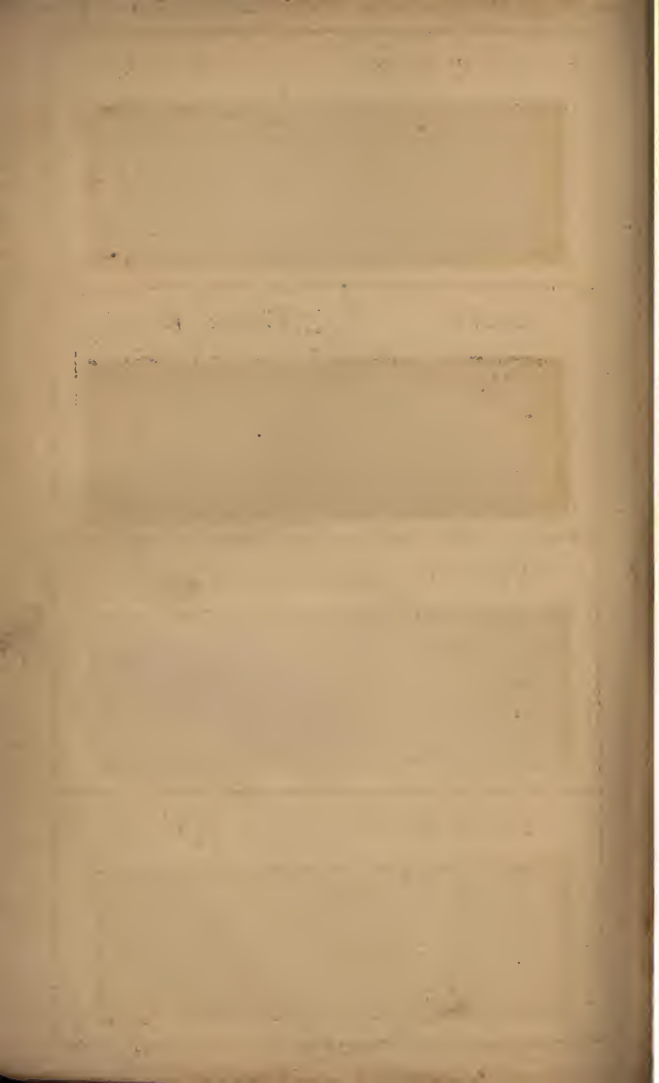
*Emerald**O. A.**Light Olive**A. D. J. K.**Chocolate**L. G. P. A.**Green Bice**A. D. J.*



*Russian Grey**P. K. A.**Tan**E. D. L. K. A.**Ashes cf Roses**P. K. A.**Red Slate**G. A. E.*



*Russet Green**A. J. D.**Gazelle**E. D. L. K. A.**Quaker Drab**A. C. J. K. E.**Light Old Gold**A. H. J.*



*Golden Brown**C. E. L. A.*

10

*Leaf Bud**A. D. J.*

102

*Dove Drab**A. C. L.*

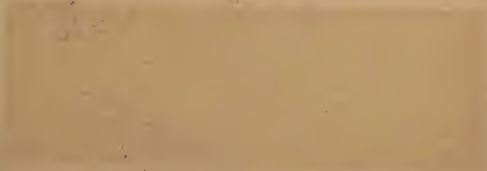
103

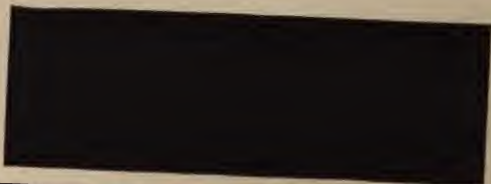
*Gray Green**A. J. K.*

104



*Leather Brown**G. K. C. A.**Olive Brown**A. C. J. E.**Forest Green**A. J. K**Magenta**Q. N. A.*



*Olive Drab**C. J. E. K. A.**Plum Brown**P. K. M. A.**Dregs of Wine**P. K. A.**Olive**S. I. D. M.*





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